

Service Manual

DLP™ Technology-Based Projection TV

PT-50DL54J

PT-60DL54J

GN1D



⚠ WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product. Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

IMPORTANT SAFETY NOTICE

There are special components used in this equipment which are important for safety. These parts are marked by ⚠ in the Schematic Diagrams, Circuit Board Diagrams, Exploded Views and Replacement Parts List. It is essential that these critical parts should be replaced with manufacturer's specified parts to prevent shock, fire or other hazards. Do not modify the original design without permission of manufacturer.

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1 Safety precautions

General guidelines

An isolation transformer should always be used during the servicing of a receiver whose chassis is not isolated from AC power line. Use a transformer of adequate power rating as this protects the technician from accidents resulting in personal injury from electrical shocks. It will also protect the receiver from being damaged by accidental shorting that may occur during servicing.

When servicing, observe the original lead dress, especially in the high voltage circuit. Replace all damaged parts (also parts that show signs of overheating.)

Always replace protective devices, such as fish paper, isolation resistors and capacitors, and shields after servicing the receiver. Use only manufacturer's recommended rating for fuses, circuits breakers, etc.

High potentials are present when this receiver is operating. Operation of the receiver without the rear cover introduces danger for electrical shock. Servicing should not be performed by anyone who is not thoroughly familiar with the necessary precautions when servicing high voltage equipment.

Avoid prolonged exposure at close range to unshielded areas of the picture tube to prevent exposure to x ray radiation.

Before returning a serviced receiver to the owner, the service technician must thoroughly test the unit to ensure that is completely safe to operate. Do not use a line isolation transformer when testing.

Leakage current cold check

Unplug the A.C. cord and connect a jumper between the two plug prongs. Measure the resistance between the jumpered AC plug and exposed metallic parts such as screwheads, antenna terminals, control shafts, etc. If the exposed metallic part has a return path to the chassis, the reading should be between $4M\Omega$. If the exposed metallic part does not have a return path to the chassis, the reading should be infinite.

Leakage current hot check

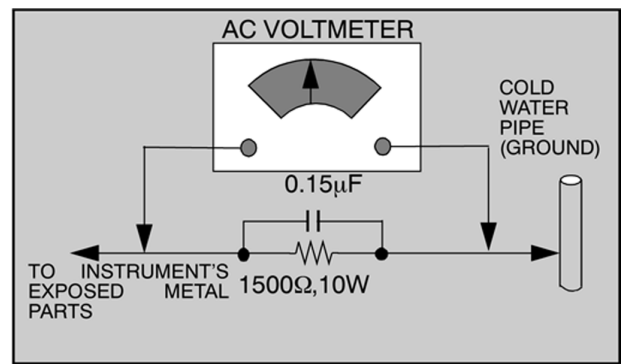
Plug the AC cord directly into the AC outlet. Do not use an isolation transformer during the check.

Connect a $1.5k\Omega$ 10 watt resistor in parallel with a $0.15\mu F$ capacitor between an exposed metallic part and ground. Use earth ground, for example a water pipe.

Using a DVM with a 1000 ohms/volt sensitivity or higher, measure the AC potential across the resistor.

Repeat the procedure and measure the voltage present with all other exposed metallic parts.

Verify that any potential does not exceed 0.75 volt RMS. A leakage current tester (such a Simpson model 229, Sencore model PR57 or equivalent) may be used in the above procedure, in which case any current measure must not exceed 0.5 milliampere. If any measurement is out of the specified limits, there is a possibility of a shock hazard and the receiver must be repaired and rechecked before it is returned to the customer.



Hot check circuit

Lamp Precautions

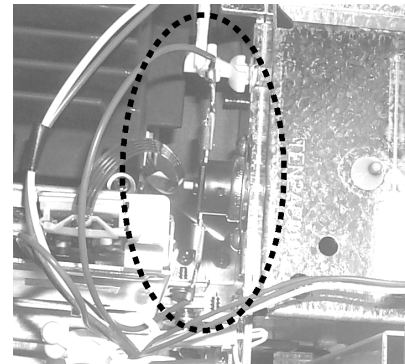
- Be sure to unplug the power cord from the power outlet when replacin the lamp.
- Because the lamp reaches a very high temperature during operation, wait until is cool when replacing
- The lamp emmits small amounts of UV-radiation, avoid direct eye contact with the light

Temperature Detection for the Lamp Unit

This projector has bimetal contacting the lamp unit to protect the lamp. If the temperature of the lamp exceeds $100^{\circ}C$, the bimetal will operate to turn off the power.

The installed position of the bimetal is shown in the illustration.

To recover the bimetal from its off state, press the protrusion of the bimetal unit until hear click.



2 About lead free solder (PbF)

NOTE

Lead is listed as (Pb) in the periodic table of elements.

In the information below, Pb will refer to lead solder, and PbF will refer to Lead Free Solder.

The lead free solder used in our manufacturing process and discussed below is (Sn+Ag+Cu).

That is Tin (Sn), Silver (Ag) and Copper (Cu) although other types are available.

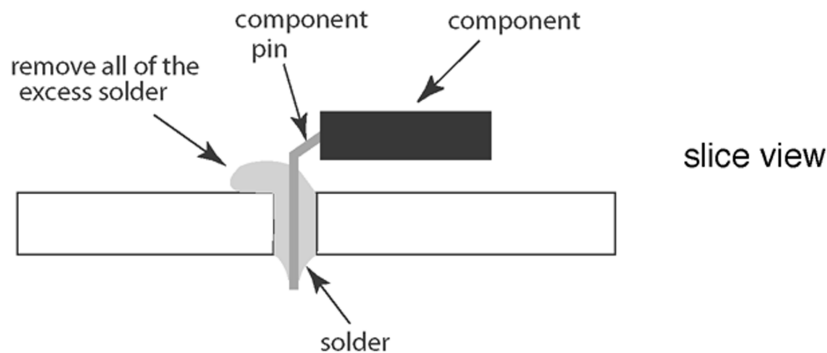
This model uses Pb Free solder in it's manufacture due to environmental conservation issues. For service and repair work, we'd suggest the use of Pb free solder as well, although Pb solder may be used.

PCBs manufactured using lead free solder will have the "PbF" or a leaf symbol stamped on the back of PCB.



CAUTION

- Pb free solder has a higher melting point than standard solder. Typically the melting point is 50 ~ 70 °F (30 ~ 40 °C) higher. Please use a high temperature soldering iron and set it to 700 ± 20 °F (370 ± 10 °C).
- Pb free solder will tend to splash when heated too high (about 1100 °F or 600 °C).
If you must use Pb solder, please completely remove all of the Pb free solder on the pins or solder area before applying Pb solder. If this is not practical, be sure to heat the Pb free solder until it melts, before applying Pb solder.
- After applying PbF solder to double layered boards, please check the component side for excess solder which may flow onto the opposite side.



Suggested Pb free solder

There are several kinds of Pb free solder available for purchase. This product uses Sn+Ag+Cu (tin, silver, copper) solder. However, Sn+Cu (tin, copper), Sn+Zn+Bi (tin, zinc, bismuth) solder can also be used.

0.3mm X 100g	0.6mm X 100g	1.0mm X 100g

3 Service notes

NOTE

These components are affixed with glue. Be careful not to break or damage any foil under the component or at the pins of the ICs when removing. Usually applying heat to the component for a short time while twisting with tweezers will break the component loose.

Leadless chip component (surface mount)

Chip components must be replaced with identical chips due to critical foil track spacing. There are no holes in the board to mount standard transistors or diodes. Some chips capacitor or resistor board solder pads may have holes through the board, however the hole diameter limits standard resistor replacement to 1/8 watt. Standard capacitor may also be limited for the same reason. It is recommended that identical components be used.

Chip resistor have a three digit numerical resistance code, 1st and 2nd significant digits and a multiplier. Example: 162 = 1600 or 1.6k Ω resistor, 0 = 0 Ω (jumper).

Chip capacitors generally do not have the value indicated on the capacitor. The color of the component indicates the general range of the capacitance.

Chip transistors are identified by a two letter code. The first letter indicates the type and the second letter, the grade of transistor.

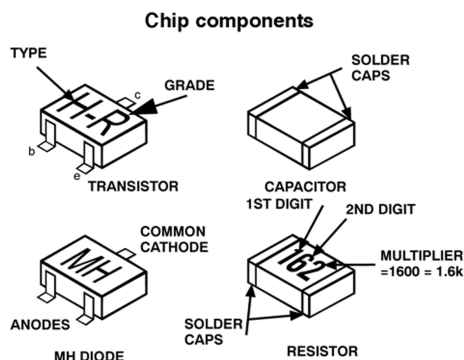
Chip diodes have a two letter identification code as per the code chart and are a dual diode pack with either common anode or common cathode. Check the parts list for correct diode number.

Component removal

1. Use solder wick to remove solder from component end caps or terminal.
2. Without pulling up, carefully twist the component with tweezers to break the adhesive.
3. Do not reuse removed leadless or chip components since they are subject to stress fracture during removal.

Chip component installation

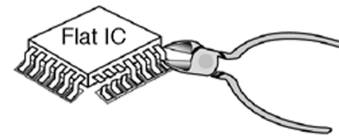
1. Put a small amount of solder on the board soldering pads.
2. Hold the chip component against the soldering pads with tweezers or with a miniature alligator clip and apply heat to the pad area with a 30 watt iron until solder flows. Do not apply heat for more than 3 seconds.



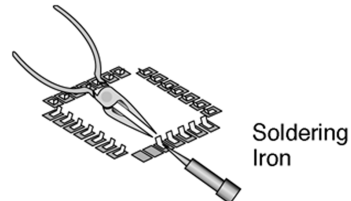
How to replace flat ic (required tools)

1. Remove the solder from all of the pins of a Flat IC by

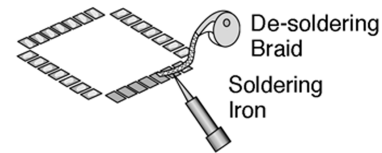
using a desolder braid



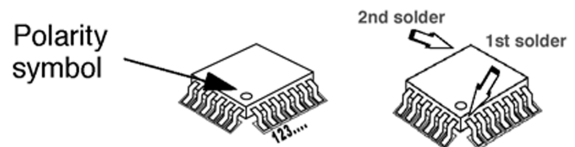
2. Put the iron wire under the pins of the Flat IC and pull it in the direction indicated while heating the pins using a soldering iron. A small awl can be used instead of the iron wire.



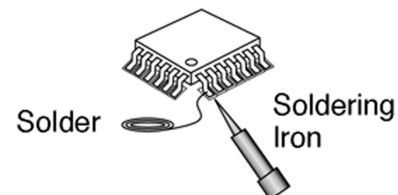
3. Remove the solder from all the pads of the Flat IC by using a de solder braid



4. Position the new Flat IC in place (apply the pins of the Flat IC to the soldering pads where the pins need to be soldered). Properly determine the positions of the soldering pads and pins by correctly aligning the polarity symbol



5. Solder all pins to the soldering pads using a fine tipped soldering iron



6. Check with a magnifier for solder bridge between the pins or for dry joint between pins and soldering pads. To remove a solder bridge, use a de solder braid as shown in the figure below



IMPORTANT


To protect against possible damage to the solid state devices due to arcing or static discharge, make certain that all ground wires are securely connected

CAUTION

The power supply circuit is above earth ground and the chassis cannot be polarized. Use an isolation transformer when servicing the receiver to avoid damage to the test equipment or to the chassis. Connect the test equipment to the proper ground (HOT or COLD) when servicing, or incorrect voltages will be measured.

WARNING

This receiver has been designed to meet or exceed applicable safety and x ray radiation protection as specified by government agencies and independent testing laboratories.

To maintain original product safety design standards relative to x ray radiation and shock and fire hazard, parts indicated with the symbol  on the schematic must be replaced with identical parts. Order parts from the manufacturer's parts center using the parts numbers shown in this service manual, or provide the chassis number and the part reference number.

For optimum performance and reliability, all other parts should be replaced with components of identical specification.

4 Location of controls



Quick reference control operation

Power - Press to turn ON or OFF

Volume - Press to adjust sound level, or to adjust audio menus, video menus, and select operating features when menus are displayed

Channel - Press to select programmed channels. Press to highlight desired features when menus are displayed

TV/Video - Press to select TV or one of the video inputs, for the main picture or the PIP frame

5 Receiver feature table

FEATURE / MODEL	PT-50DL54J / PT-60DL54J
CHASSIS	AP836
MICRO	256K
MENU LANGUAGE	ENG/SPAN/FR
CLOSE CAPTION	X
V-CHIP (USA/CANADA)	X
CHANNEL INFO BANNER	X
VIDEO INPUT SKIP	SKIP
CHANNEL COUNT	181
PIP (1T), 2T PIP (2T), 2T SPLIT	2T SPLIT
REMOTE CONTROL (W/LIGHT)	EUR7627Z20
COMB FILTER	MOTION ADP, 3D Y/C
HEC/VEC (X=BOTH)	X
NEW YNR	X
V/A NORM (X=BOTH)	X
COLOR TEMP	X
AIP	X
PRESET/INPUT LABELING	X
VIDEO PICTURE MEMORY	X
DIGITAL SCAN RATE	720p, 1080i, 480p (ALL CONVERTED TO 720p)
RESOLUTION	1280 X 720
RGB IN RESOLUTION	VGA (640X480), SVGA (800X600), XGA (1024X768)
MTS/SAP/DBX	X
BUILT-IN AUDIO POWER	15W X 2 (10%)
No. OF SPEAKERS	4
BASS/BALANCE/TREBLE CONTROL	X
AI SOUND	X
SURROUND	X
SPATIALIZER/BBE	BBE/VIVA
A/V IN (REAR/FRONT)	3(2/1)
A/V OUT	X
AUDIO OUT (FAO: F, VAO:V)	X
COMPONENT INPUT (Y, Pb, Pr)	3
S-VHS INPUT (REAR/FRONT)	2/1
PCMCIA / SD	X
HDMI/HDPCP INPUT	HDMI/HDPCP
RGB IN (D-SUB15)/(REAR/FRONT)	2(1/1)
PC AUDIO IN (C3) (REAR/FRONT)	2(1/1)

Note:

Specifications are subject to change without notice or obligation.

Trademark Acknowledgements

- DLP and DMD are registered trademarks of Texas Instruments
- VGA and XGA are trademarks of International Business Machines Corporations.
- S-VGA is a regitered trademark of the Video Electronics Standards Asociation.

All other trademarks are the property of the various trademark owners.

6 Board Description Table

BOARD	PART NUMBER	DESCRIPTION
* L-BOARD	TNP2AA179	DLP™ FORMATTER
* DG-BOARD	TNP2AA178	DIGITAL VIDEO
H-BOARD	TNP2AA180	REAR A/V
P-BOARD	TNP2AA181	POWER SUPPLY
CW-BOARD	TNP2AA185	CW INDEX SENSOR
G-BOARD	TNP2AA184	SIDE A/V
K-BOARD	TNP2AA186	KEYBOARD
PS-BOARD	TNP2AA187	REG AND FAN
ZJ-BOARD	TNP2AA190	SP JUNCTION
PK-BOARD	TNP2AA191	POWER KILL SW
TU-BOARD	TNP2AA192	TUNER
Z-BOARD	TNP2AA193	AUDIO OUT

NOTE

When ordering a replacement board assembly, append an “S” to the board number

EXAMPLE

To order the L-Board, the replacement board is TNP2AA179S

* NOTE

The L-Board and DG-Board are non-serviceable boards. If any of these boards are defective, replace it with a new one. When DG-Board is exchanged, use EEPROM copy jig (see section 9) to copy data from the old board to the new board. The reason for this is in order to copy lamp time count into the new board.

6.1. Map of Connectors

S TO DG12	
1	SCAN0
2	SCAN1
3	P_LED_R
4	P_LED_G
5	3.3V_STB
6	GND

DG11 TO TU1	
1	RESERVE
2	AFC1
3	AFC2
4	GND
5	SCL_1
6	SDA_1
7	GND

TU2 TO H2	
1	M_TNR
2	GND
3	S_TNR
4	GND
5	L_AUDIO_OUT_DTV
6	GND
7	R_AUDIO_OUT_DTV
8	GND

H5 TO DG7	
1	AUDIO_MUTE
2	PC1_L
3	PC1_R
4	GND
5	DV1_L
6	DVI_R
7	GND
8	GND
9	GND
10	HDMI_L
11	HDMI_R
12	GND
13	GND
14	GND
15	GND
16	S_PR
17	S_C/PB
18	GND
19	S_V/Y
20	GND
21	M_PR
22	M_C/PB
23	GND
24	M_V/Y
25	GND
26	(JPEG_C)
27	GND
28	(JPEG_Y)
29	GND
30	HDMI_A_MUTE

G2 TO DG08	
1	RGB2_R
2	GND
3	RGB2_G
4	GND
5	RGB2_B
6	GND
7	RGB2_H
8	GND
9	RGB2_V
10	GND

Z2 TO P6	
1	AUDIO_+18V
2	AUDIO_GND
3	AUDIO_GND
4	AUDIO_-18V
5	NC

TU3 TO PS8	
1	GND
2	REG 5V (ANALOG)
3	GND
4	TUNER 30V

Z1 TO H4	
1	AMP_L_IN_AUDIO
2	AUDIO_GND
3	AMP_R_IN_AUDIO
4	AUDIO_GND
5	AUDIO_MUTE

H6 TO DG6	
1	GND
2	GND
3	GND
4	5V
5	GND
6	9V
7	GND
8	GND
9	HDMI_A_PD
10	SCL_1
11	SDA_1
12	GC3_HFR
13	9V
14	GND
15	5V
16	HPD DET.
17	HPD CONT
18	HDMI WP

ZJ1 TO Z3	
1	AMP_GND
2	SP_OUT_R
3	AMP_GND
4	AMP_OUT_L

G1 TO H1	
1	L3_S_IN_L
2	L3_Y
3	GND
4	L3_V
5	GND
6	L3_C
7	GND
8	L3_AUDIO_L
9	L3_AUDIO_R
10	GND
11	PC2_AUDIO_L
12	PC2_AUDIO_R
13	GND
14	GND

DG2 TO P5	
1	AC_STOP
2	SHUT_DOWN
3	SOS_2
4	FUN_SOS
5	FAN_CON
6	FAN_ON/OFF
7	AC_SW
8	GND
9	7V_STB
10	AUDIO_MUTE
11	POD ON/OFF
12	GND

DG15 TO L5	
1	GND
2	DIO31
3	GND
4	SCL_4
5	SDA_4
6	GND
7	CW_INDEX
8	LAMP_LIT
9	LAMP_EN
10	RESETZ
11	PGOOD

L4 TO P9	
1	3.3V
2	3.3V
3	3.3V
4	GND
5	GND
6	GND
7	5V
8	GND
9	12V
10	GND

P7 TO PS1	
1	TUNER_30V
2	REG_10V
3	GND
4	REG 12V (FAN)
5	GND
6	REG 5V (DIGITAL)
7	GND
8	5.5V (ANALOG)
9	GND
10	3.9V
11	GND
12	OUTPUT_CONTROL
13	FAN ON/OFF CONTROL
14	FAN VOLTAGE CONTROL
15	FAN SOS

DG5 TO PS2	
1	REG_9V
2	GND
3	REG_5V
4	GND
5	REG_5V (ANALOG)
6	GND
7	REG_3.3
8	GND
9	REG 2.5
10	GND

DG4 TO L1	
1	TA-
2	TA+
3	GND
4	TB-
5	TB+
6	GND
7	TC-
8	TC+
9	GND
10	TCLK-
11	TCLK+
12	GND
13	TD-
14	TD+

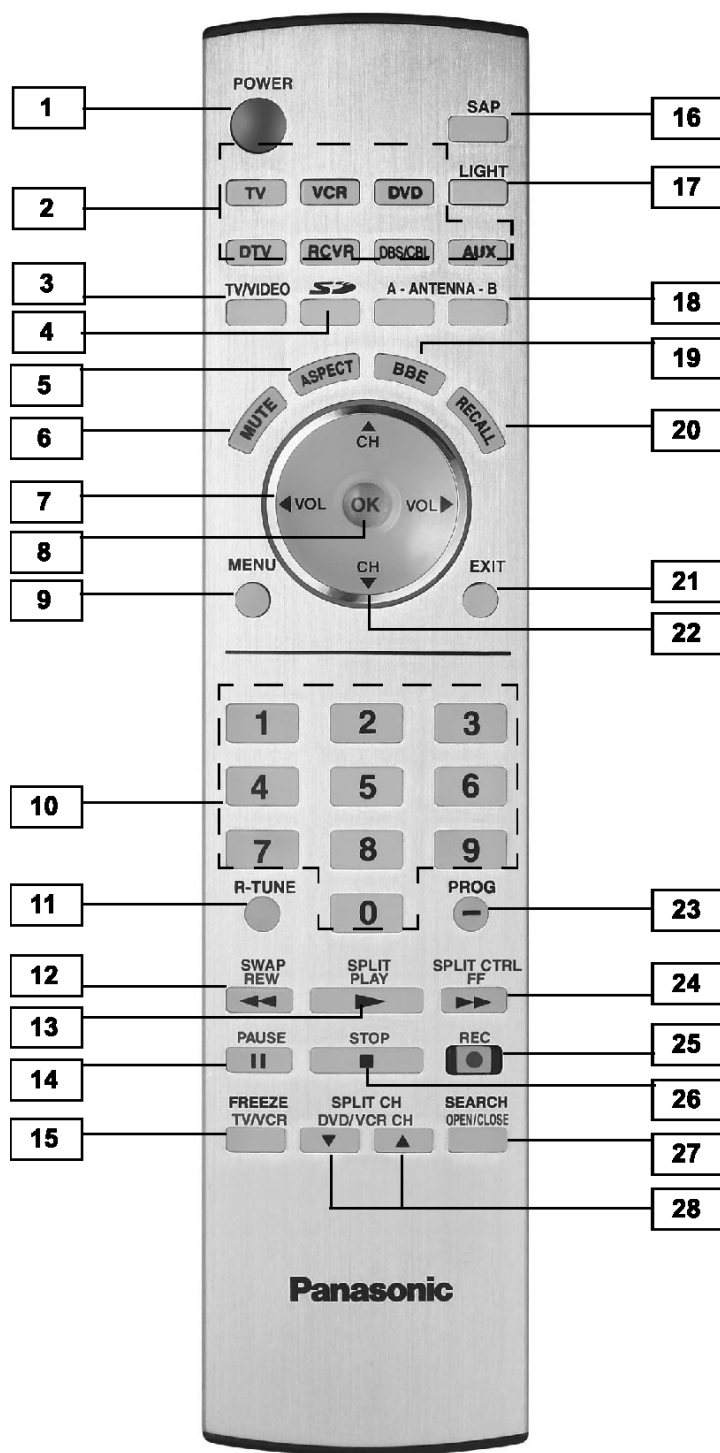
L2 TO CW1	
1	5V
2	GND
3	CWI_SENSE
4	SDA_4
5	SCL_4
6	GND
7	3.3V

L3 TO CW	
1	CW_COM
2	COIL_A
3	COIL_B
4	COIL_C

DG1 TO PB1	
1	LAMP_ON
2	GND
3	LAMP_DET
4	LAMP_SEL

P4 TO LAMP SW	
1	LAMP SW
2	LAMP SW
3	BIMETALLIC
4	BIMETALLIC

7 Location of controls (EUR7627Z20 remote)



BUTTON NUMBER	DESCRIPTION	BUTTON NUMBER	DESCRIPTION
1	Press to turn ON and OFF. The ON/OFF indicator LED (green) on the projection television will be lit when the projection television is on.	13	Press to display split frame, press again to delete split frame. While remote is in VCR or DVD mode, press to play.
2	Press to select TV, VCR or other device to operate.	14	While remote is in VCR or DVD mode, press to pause.
3	Press to select TV or input modes for main picture or split frame.	15	FREEZE - While in TV mode, press to stop action in the Split frame.
4	Press to access photo viewer. Also press while photo viewer is displayed to access photo viewer set up menu.	16	Press to access audio modes (Stereo, SAP or Mono).
5	Press to select picture shape to match programming format. Also used for photo viewer to change aspect of the image on-screen while in slide mode.	19	Press to turn BBE VIVA 3D OFF or ON.
6	Press to mute sound.	20	Press to display or delete channel banner.

BUTTON NUMBER	DESCRIPTION	BUTTON NUMBER	DESCRIPTION
7	Press to adjust projection television sound and navigate in menus.	21	Press to exit menus.
8	Press to choose menu and sub-menu entry	22	Press to change channels and navigate in menus.
9	Press to display main menu or return one step backward in menus	23	In DTV mode press after entering major channel numbers to enter minor (-) channel numbers
10	Press numeric keypad to select any channel or press to enter alphanumeric input in menus.	24	Press to use numeric keypad and TV/VIDEO buttons for Split operation. FF - While in VCR or DVD mode, press to fast forward.
11	Press to switch to previously viewed channel or input mode	25	While remote is in VCR mode, press to record.
12	Press to swap main picture with Split frame. REW - While remote is in VCR or DVD mode, press to rewind.	26	While remote is in VCR or DVD mode, press to stop.
17	Press to illuminate remote buttons	27	SEARCH - Press to scan available channels in search frames. Press again to delete search frames. OPEN/CLOSE - Press to open or close DVD tray.
18	These buttons are not operational for this model.	28	Press to change channels for Split frame. Also press to change chapter for DVD.

Note:

For additional information about this remote please refer to the owner's manual section remote operation, listed on the parts list section.

8 Self-Check Function

When symptoms like “like power fails sometimes” or “sometimes there is no picture and/or sound” can not be confirmed at the time of servicing, the self-check function can be used to confirm the occurrence and to find the defective circuit.

In case of “power failure”, flashing of the “POWER” indication (red) at the front of the unit can be used to narrow down the +B line.

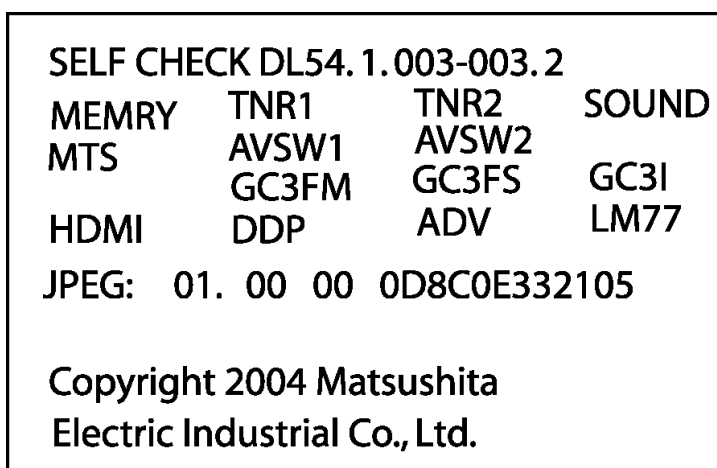
8.1. Self-Check of the microcomputer control system (bus line)

Indication Method

In service mode press VOL (-) on TV and OK on remote control at the same time for at least three seconds to reset the TV, then the menu will be displayed. If any button is pressed the menu will dissappear.

Return to the normal screen

Press any button on the unit or in the remote control.



NOTE:

The version of the figure shown above may not be the latest, use it only as a reference.

8.2. Power LED Flashing timing table

When an abnormality has occurred, the protection circuit operate and cuts the power supply. At this time, the defective line can be identified by the number of flashes (red) of the power led indication at the front of the unit.

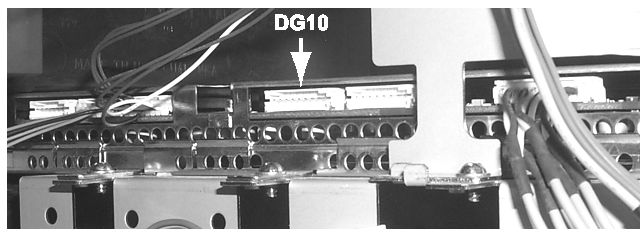
NUMBER OF FLASHES	CIRCUIT	MICRO PIN
1	LOAD SHORTAGE	92
2	OVER VOLTAGE	93
3	FAN SOS	94
4	MAIN 3.3V	88
5	LAMP DISABLE	61
6	GC3FM-IIC	IIC
7	GC3FS-IIC	IIC
8	GC3I-IIC	IIC
9	COLOR WHEEL STOP	110

9 EEPROM copy jig

This TV has a feature that allows to clone from main EEPROM data adjustments from a TV to other by connecting a jig to the TV set, or can be used to back-up data before making adjustments. A jig part number TXFJIG02SER, is available through Matsushita/Panasonic Services.

Preparation:

To connect this jig, remove the lower back cover as instructed on disassembly for service section on this service manual and insert the jig into DG10 connector located on the DG-Board. (See figure)



EEPROM copy jig connection

Procedure to copy data:

1. Enter to service mode and display service menu.
2. Select “AREA” DAC and then press ACTION button on remote to enter. Press VOL right/left to select one of the following options then press ACTION:
 - Select ALL to copy all main EEPROM data

- Select ADJ to copy only adjustment data.
 - Select FIX to copy only fix data.
3. To copy data from main EEPROM to jig, select "IN→EX" DAC and press ACTION button on remote.
 4. To copy data from jig to main EEPROM, select "EX→IN" DAC and press ACTION button on remote.

NOTE:

Always copy EEPROM data when DG-board is exchange to copy the lamp time of use.

10 Disassembly for service

NOTE:

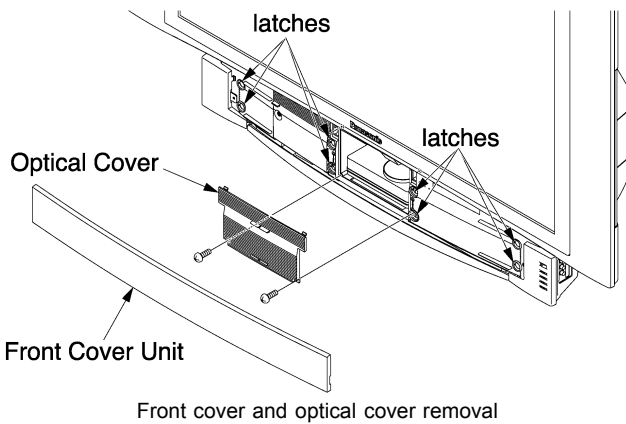
Board ground wires may have to be disconnected to disassemble some boards. All ground wires must be reconnected using jumper leads, if necessary, before power is applied to TV for service.

Front Cover and Optical Cover removal

Front cover is secured to the cabinet TV. Grip panel from top and bottom part, gently pull to remove. Once the front cover is removed, remove the screws from the the lower part of the optical cover (2). When reassembling, make certain to firmly press on the panel where the insertion points (8) are located.

NOTE:

When the optical cover is removed the TV will shut off automatically and cannot be turn on unless the optical cover is placed back on.

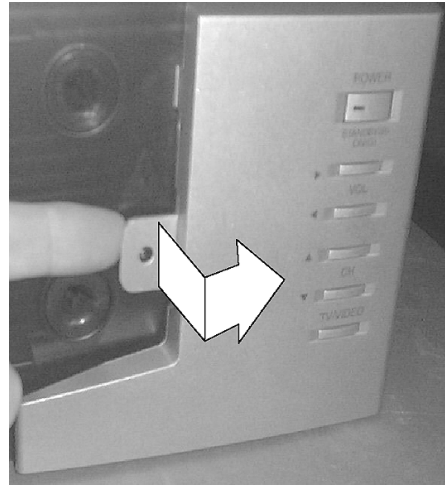


Keyboard removal

1. Remove the front panel.
2. Remove the screw from the keyboard.

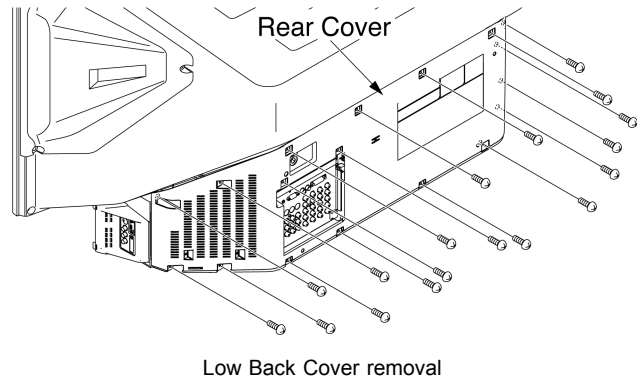


3. Gently pull out from the screw hole tab on the keyboard and push to right



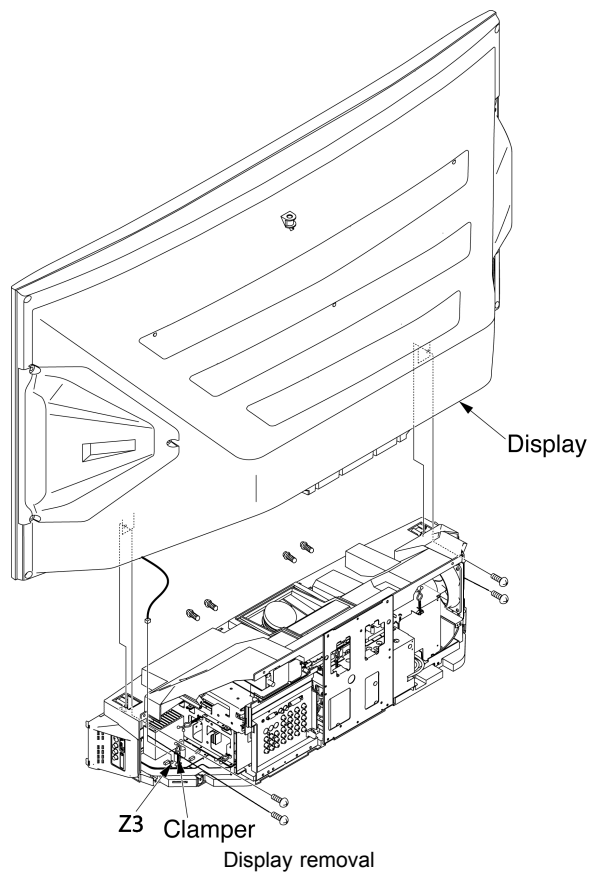
Low Back Cover removal

Rear cover is secured to the base of TV with screws. Remove all the screws and pull gently the cover to remove.



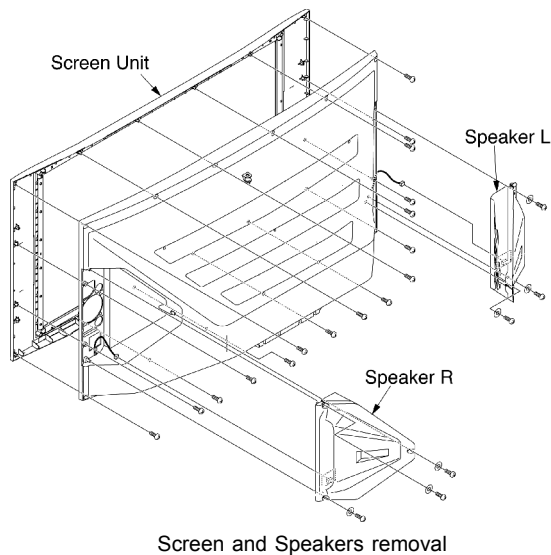
Display removal

Remove low back cover. The display assembly is secured with screws to the base in front and back side.



Screen and Speakers removal

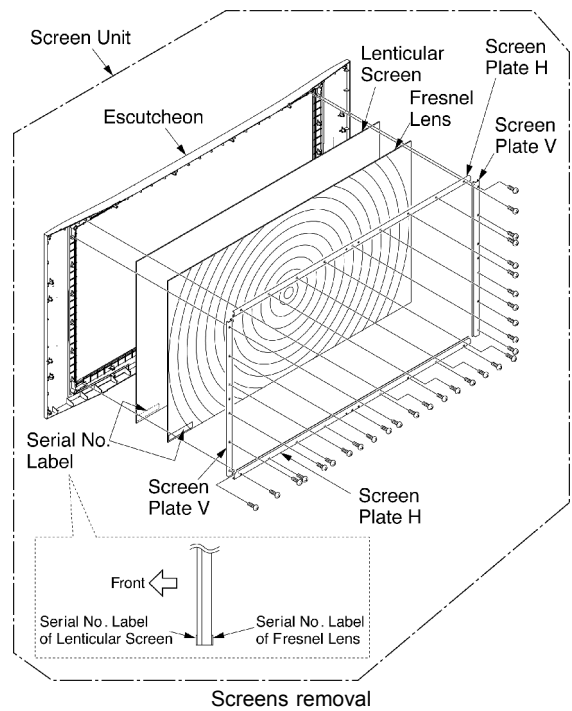
Remove low back cover, then remove the display. The speakers are secured to the display assembly by screws.



Screen and Speakers removal

Screens removal

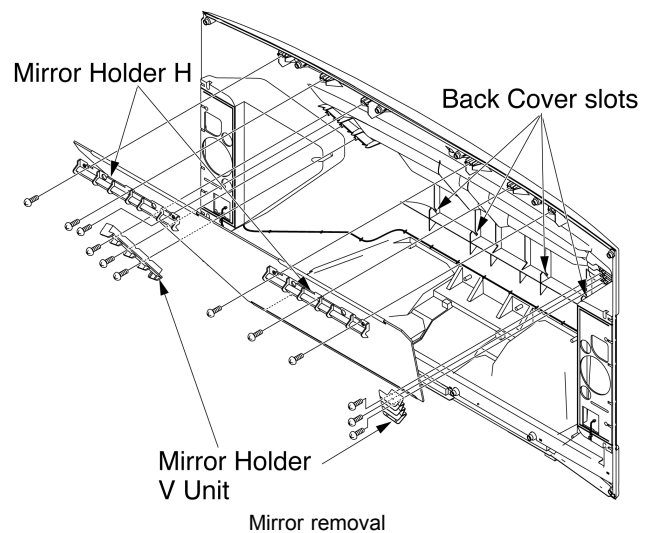
Remove the display assembly, then remove the screws to open the display.



Screens removal

Mirror removal

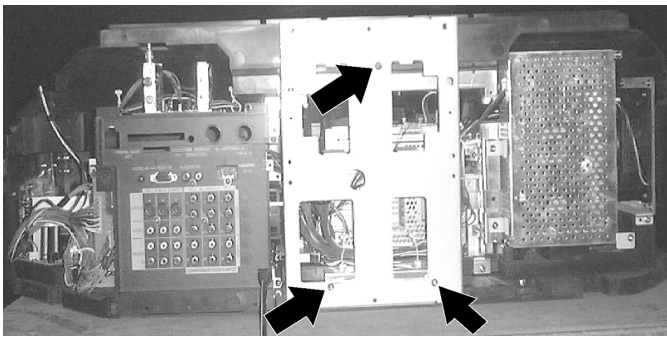
The mirror is attached inside the cabinet cover. Carefully remove display to access its interior surface and remove the screws securing the brackets that hold the mirror at the top and sides to the mirror.



Mirror removal

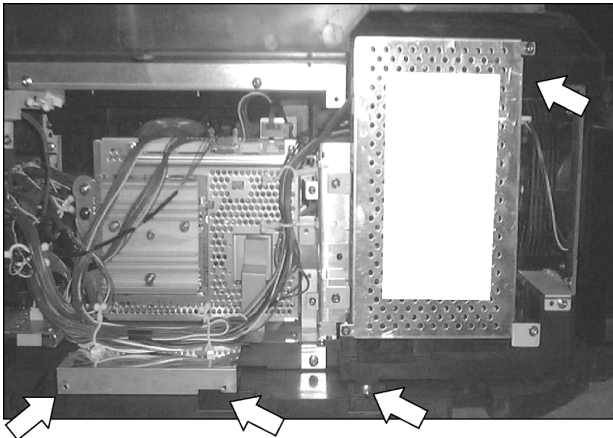
10.1. Optical Block

1. Remove the low back cover.
2. Remove the rear support plate as shown below.



Rear support plate removal

3. Remove four screws as shown. Two behind the metal sheet, one between ballast and fan, and one under the ballast.

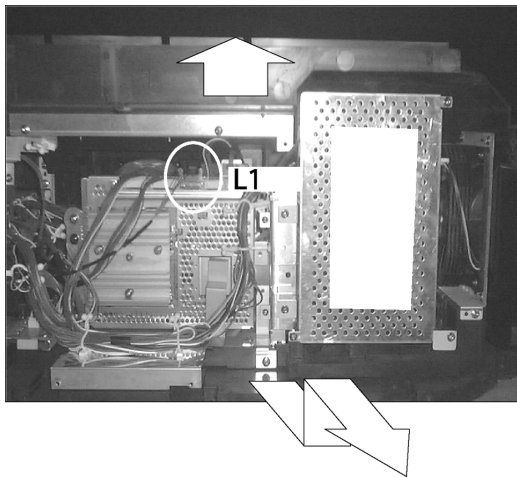


Optical block screw location

4. Unplug L1 connector.
5. Open the front SD card door before to take optical block out, to avoid door from getting stock
6. Lift the upper cabinet, then take the optical block out by pulling out, up and out as shown.

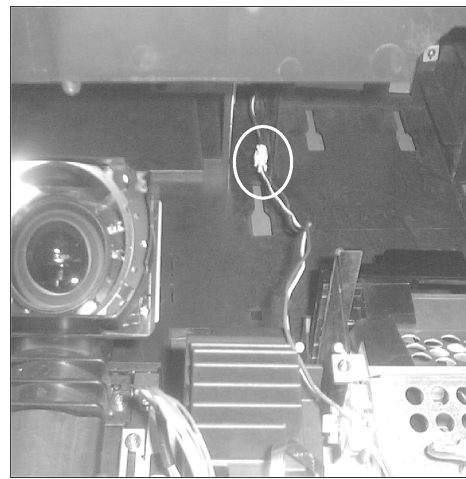
NOTE:

Do not take out the optical block completely, there is the lamp connector behind that must be unplugged.



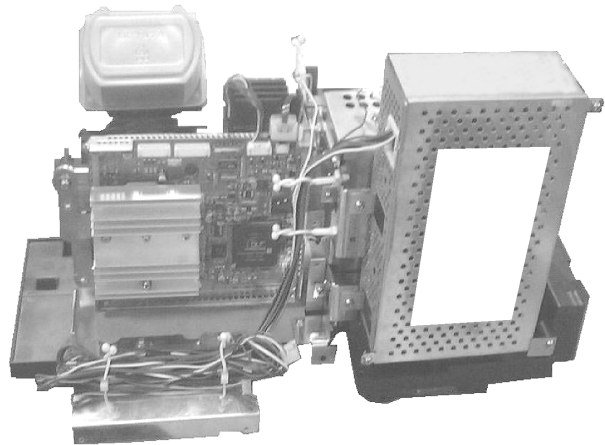
Optical block pull out

7. Unplug the lamp connector shown inside the white circle. Then take the optical block out completely.



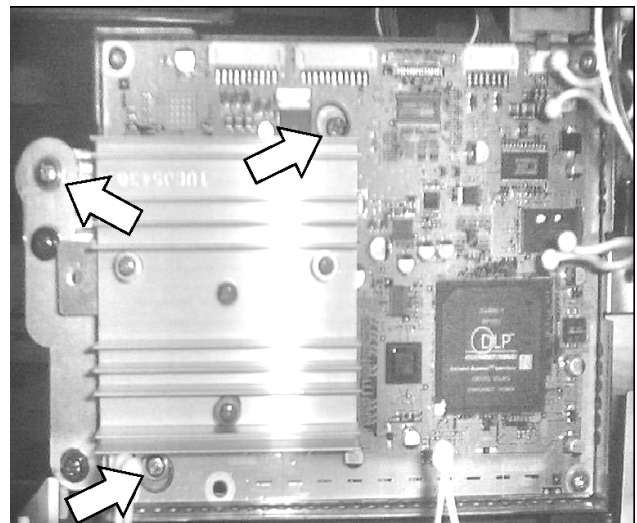
Lamp Connector

8. The optical block is shown below.



10.2. L-Board Removal

1. Remove the three screws that holds the board.

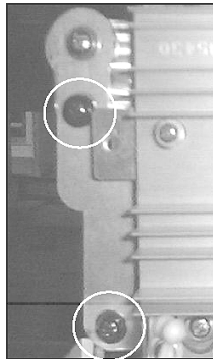


2. When placing this board, do not tight completely the three screws shown on above picture, first move the board right/left and up/down to center the image on the screen, then when best overall image centering is obtained, tight the screws.

NOTE:

Position of L-Board is critical to the raster position. If the black screws are not removed, the L-Board will keep its position. However, if they are removed, raster position must

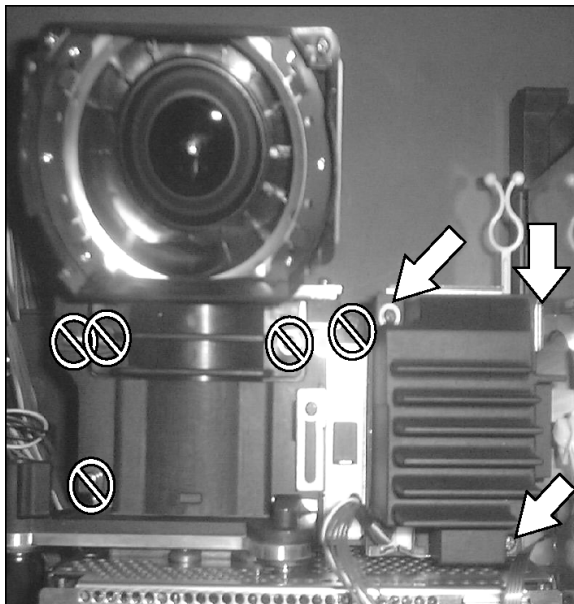
be readjusted.



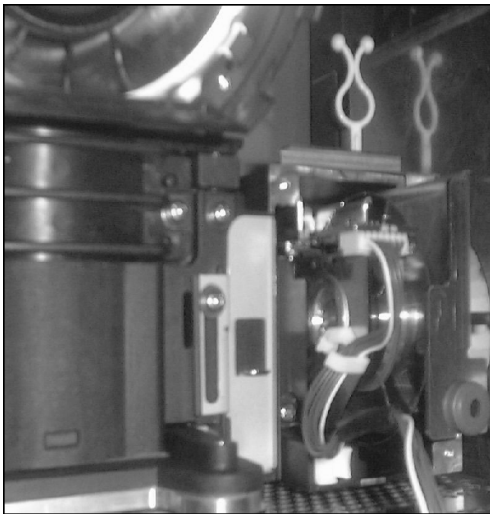
Black Screws

10.3. Color Wheel Removal

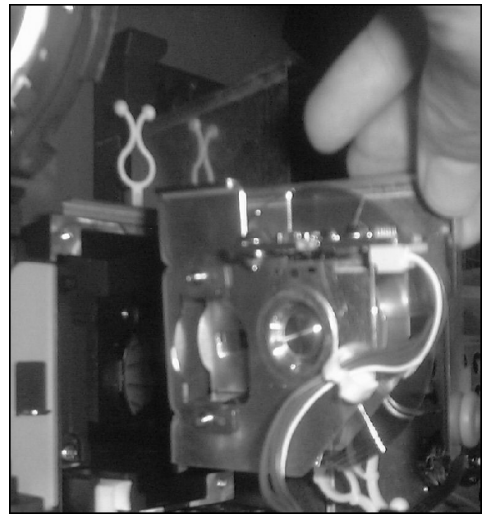
1. Remove the three screws marked with arrows on the figure, do not remove any of the screws marked with a crossed circle.



2. Carefully remove the color wheel.



3. Do not scratch or break

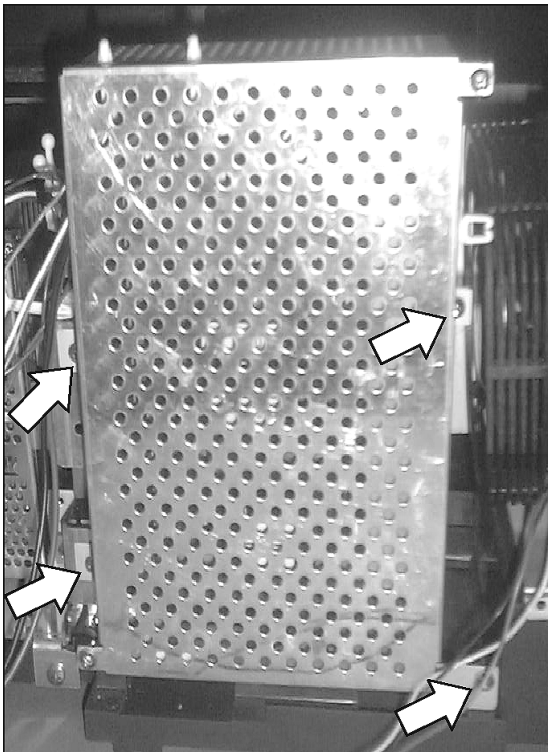


10.4. Ballast Removal

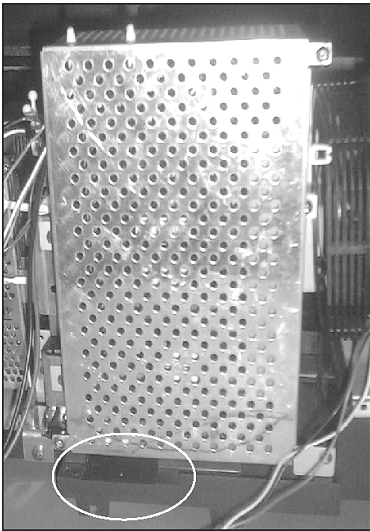
1. First remove the lamp



2. Remove four screws from the ballast.

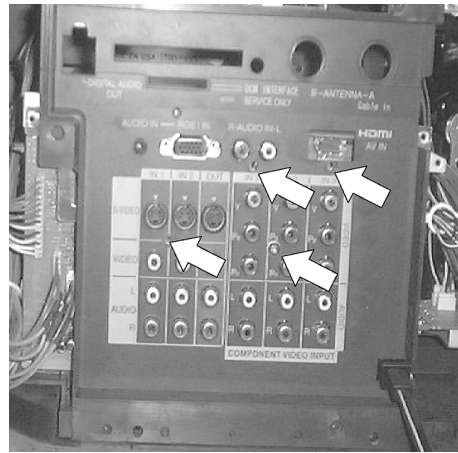


3. Remove the two screws from the ballast cable connector, located on the bottom of ballast, shown inside the white circle in the picture.

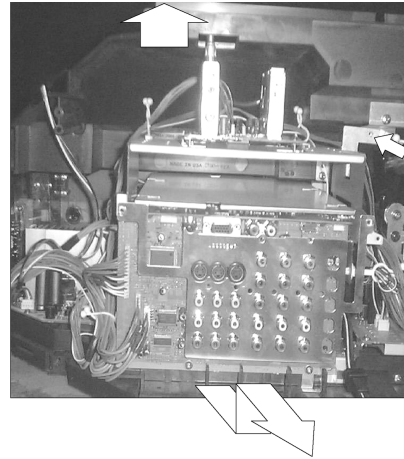


10.5. Chassis Assembly

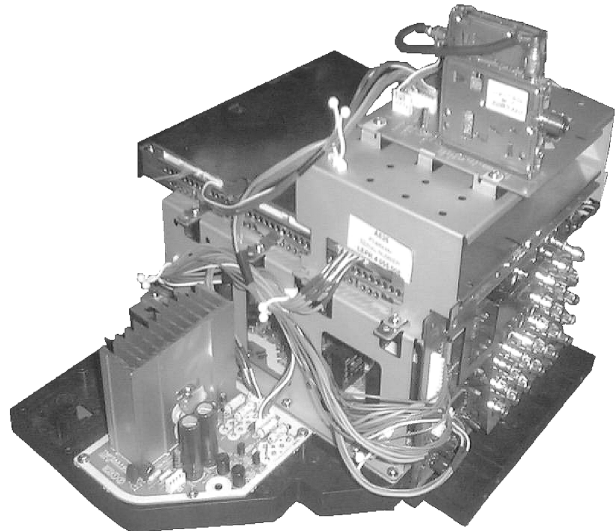
1. Remove the four screws from the A/V bracket



2. Remove one screw shown on the right side of picture
3. Pull up the cabinet and hold, then pull the chassis out, up and out as shown.

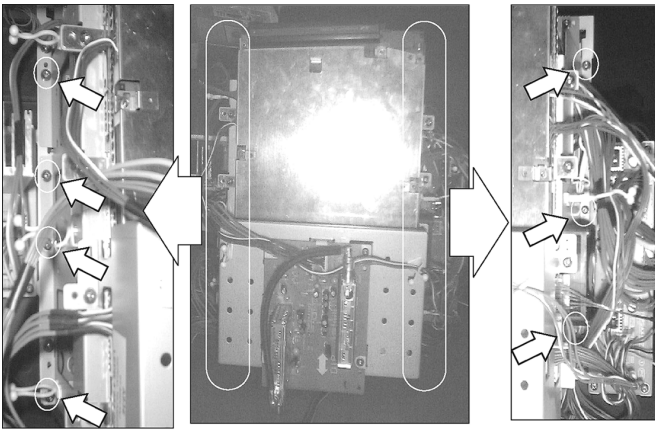


4. Shown is the chassis out from th TV.

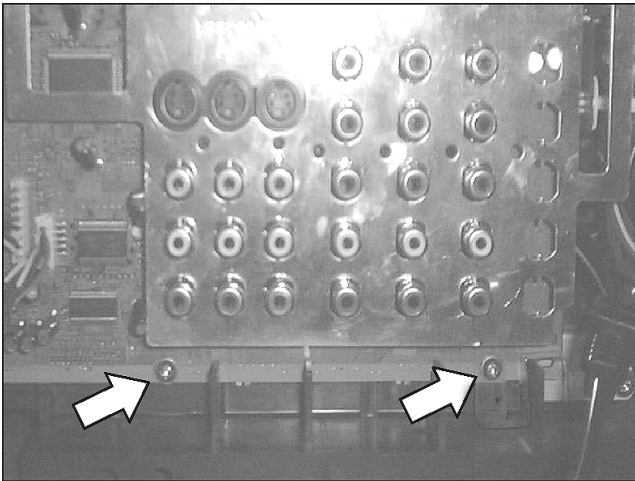


10.6. Chassis Disassembly

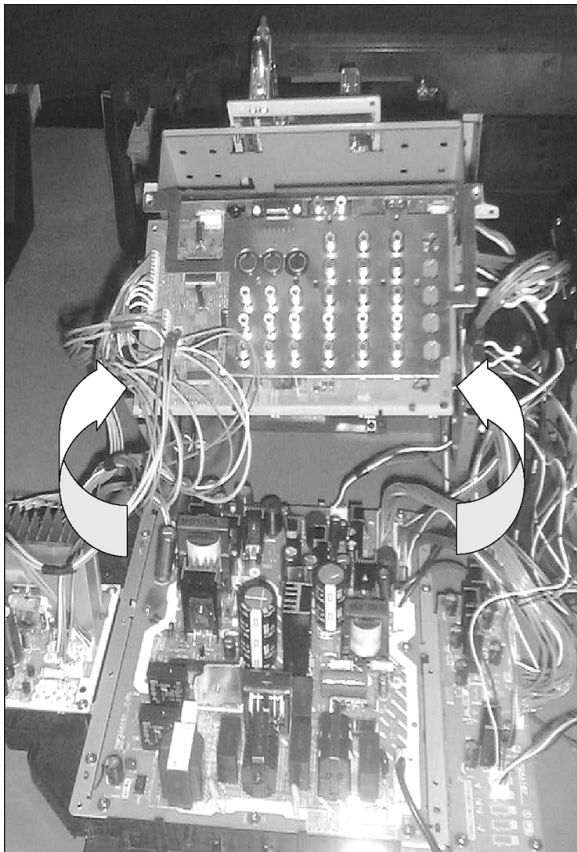
1. Remove three screw from the right side of chassis and four screw from the left side.



2. Remove two screws located on the bottom part of A/V jacks.

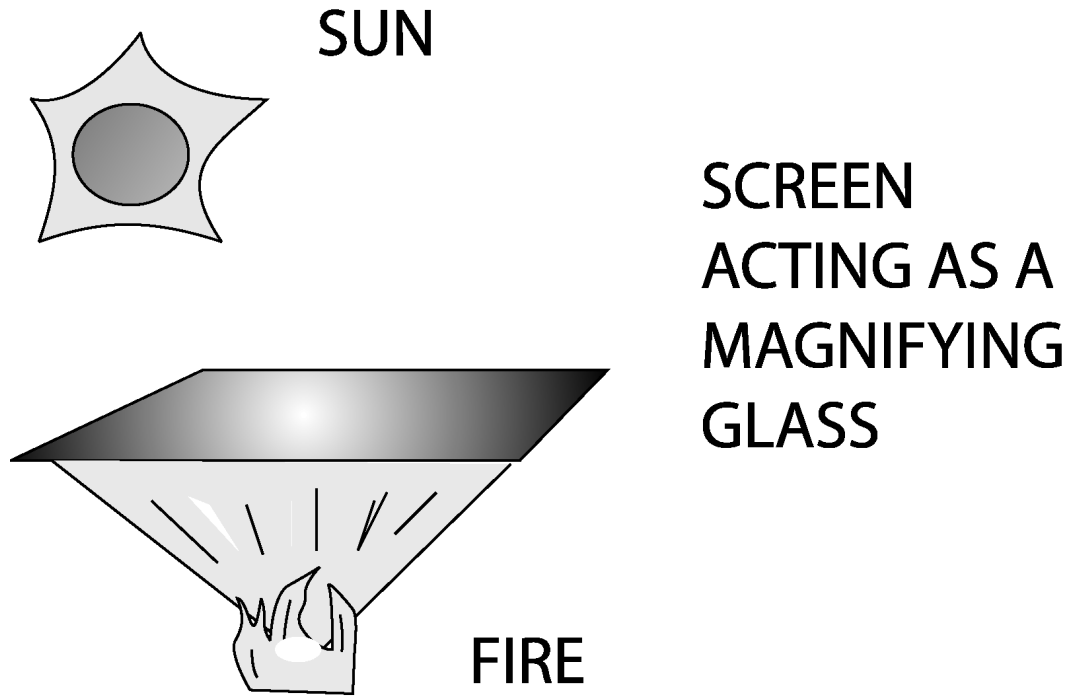


3. Lift the top part of the chassis.



10.7. Screen assemblies warning

When storing or disposing of screen assemblies, be sure not to place them in direct sunlight. These screens may act as a magnifying glass and could cause a fire.



11 B+ Voltages Table

Preparation:

Set the following controls

- Picture to Normal
- Bright to Normal
- Volume to MIN (0)

Procedure:

1. Apply a NTSC color bar pattern
2. Connect the negative lead of the digital voltmeter to noted ground.
3. Connect the positive lead of the digital voltmeter to each test point and confirm the B+ voltages.

USE COLD GROUND TO MEASURE THE FOLLOWING VOLTAGES

No.	P-BOARD	TEST POINT	VOLTAGE
1	UNREGULATOR 8V	C847 +	7.9±1.0
2	UNREGULATOR 4V	C852 +	4.1±1.0
3	REGULATOR 9V	TP54	9.1±0.5
4	REGULATOR 3.3V	TP55	3.3±0.5
5	REGULATOR 12V	TP56	12.2±0.5
6	REGULATOR 5V	C866 +	5.1±0.5
7	STANDBY 8V	TP53	8.3±1.5
8	BT 30V	P7 (1)	30.0±1.5
9	AUDIO +B	D841 (K)	21.5±2.0
10	AUDIO -B	D842 (A)	-21.5±2.0
11	BT 30V	PS8 (4)	30.0±1.5
12	REGULATOR 9V	C952+	9.0±0.5
13	REGULATOR 5V	C956+	5.0±0.5
14	REGULATOR 3.3V	C960+	3.3±0.5
15	REGULATOR 2.5V	C970+	2.5±0.5
16	FAN +B	C964+	7.5 ~12.7V

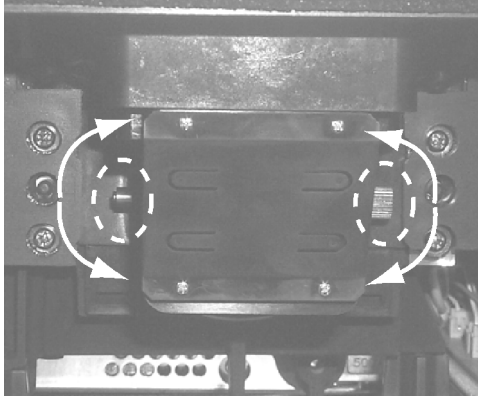
USE HOT GROUND TO MEASURE THE FOLLOWING VOLTAGE

No.	P-BOARD	TEST POINT	VOLTAGE
1	BALLAST +B	L812	330±15.0

12 Mechanical Adjustments

12.1. Focus Adjustment

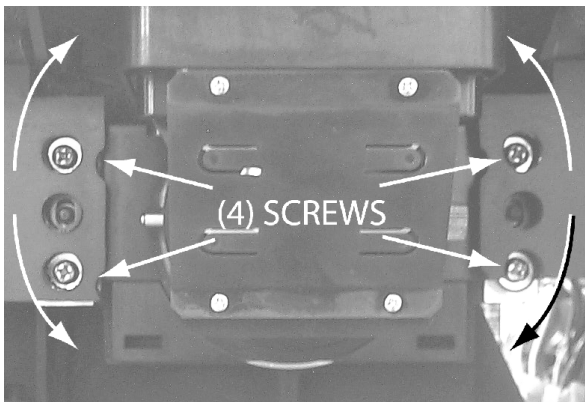
1. Apply a crosshatch pattern.
2. Optical focus adjustment is located in front of TV.
3. Remove the front cover.
4. Remove the optical cover (two screws).
5. Loosen the adjustment locking knob right side (dotted circle).
6. Adjust focus by rotating the knob (see picture).



7. Adjust to obtain the best adjustment possible.
8. When adjustment is finished remember to tighten the locking knob.

12.2. Tilt Adjustment

1. Apply a crosshatch pattern.
2. Adjustment is located in front of TV.
3. Remove the front cover.
4. Remove the optical cover (two screws).
5. Loosen the 4 screws shown in the picture.
6. Adjust tilt by rotating (see picture).



7. Adjust to obtain the best adjustment possible.
8. When adjustment is finished remember to tighten the screws.

13 Electronic Adjustments

13.1. Picture Position Adjustment (HPOS, VPOS)

This adjustment is intended to correct the horizontal and vertical position of the picture

1. Apply a crosshatch pattern.
2. Adjust "HPOS" so that horizontal image position fits the center mark of the screen.
3. Adjust "VPOS" so that horizontal image position fits the center mark of the screen.

13.2. Sub-Bright Adjustment (BRIGH)

This adjustment is intended to set 7 IRE signal to black level mode.

Procedure:

1. Set PICTURE MODE TO VIVID, PICTURE settings to normal.
2. Apply a color bar with no color or if available a grey levels pattern.
3. Adjust DAC "BRIGH" data so that bar near to black bar becomes near black.

13.3. Color Adjustment (TINT, B-Y_G, R-Y_A)

This adjustment requires that the servicer use its skills in observing what a colorbar pattern should look like.

Preparation:

1. Set the following in the user picture menu as follows:
 - Picture MODE to VIVID
 - Picture settings to NORMAL

Procedure:

1. Apply a color bar pattern
2. Adjust DAC "TINT" so that the fourth bar from right to left becomes purple and good color balance.
3. If the adjustment is high, the bar will look pinkish, if it is low will look bluish.
4. Adjust "B-Y_G" so blue look natural, and the rest of the colors become in balance.
5. Adjust "R-Y_A" so red look natural, and rest of the colors become in balance.
6. Check that white bar is real white, no bluish or reddish or tending to become grey.

13.4. Tint and color check

Set picture mode to VIVID mode. Again, the service ability to see color and the balance of color is important for these adjustments.

Tint check

1. In picture menu set PICTURE NORM to YES.
2. Apply color bars to the video input.
3. Magenta is composed of two colors, blue and red.

4. Check to see that magenta does not have too much blue or too much red.
5. Check cyan. Cyan is composed of blue and green. It should not have too much blue or green.
6. Use a test signal from a VCR or laser disk that has a pre-recorded close up of a signal that has good flesh tones.
7. The signal on the VCR or laser disk should look normal.

Color Check

Using a clean RF or video signal, set the color level so that it does not saturate or appear harsh. Make sure that color is not set so that it appears dull and washed out. Look for natural colors, try to adjust the picture to appear as a normal photograph.

13.5. Color Wheel Index Delay Adjustment (CW-I)

This adjustment requires that the servicer use its skills in observing what a colorbar pattern should look like.

Preparation:

1. Set the following in the user picture menu as follows:
 - PIC MODE to VIVID
 - COLOR TEMP to COOL
 - PICTURE SETTINGS to NORMALIZED

Procedure:

1. Apply a color bar pattern
2. Enter service menu.
3. Select "CW-I" and press OK.
4. With DAC "CW-I" on screen press "RECALL" button on remote to display red color ramp pattern.
5. Adjust "CW-I" so that red color ramp pattern is smooth, with no decoloration.
6. Press "RECALL" button on remote control to change to green color ramp, and confirm that there is no decoloration. In case of decoloration, adjust "CW-I" to correct.
7. Press "RECALL" button on remote control to change to blue color ramp. Confirm for no decoloration.
8. Repeat procedure until best adjustment is obtained.

13.6. White Balance Adjustment

This adjustment must be performed every time the lamp is replaced.

Preparation:

1. Set the following in the user picture menu as follows:
 - PICTURE MODE to VIVID
 - PICTURE SETTING NORMALIZED
1. Apply a black and white pattern or color bar with no color.
2. Enter the service mode.
3. Adjust "WB" to obtain the best black and white.
 - 00 is factory default
 - 01 is reddish

- 05 is bluish

13.7. MTS Circuit Adjustment

Note:

It is important to adjust the MTS circuit in the order shown below.

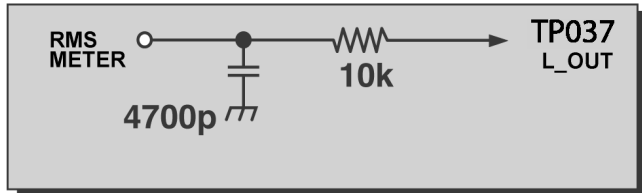
The MTS circuit adjustment require two steps:

1. Input level adjustment.
2. Stereo separation adjustment.

Input Level Adjustment (MTSIN)

Preparation:

1. Connect an RMS meter (A.C. range) with filter jig as shown



Filter jig

2. Connect an RF signal generator to the RF antenna input.

Procedure:

1. Apply the following signal from the RF signal generator:
Video: 100 IRE flat field, 30% modulation.
Audio: 300Hz, 100% modulation, monaural (70 ± 5dB, 75Ω open, P/S 10dB). Make sure to turn off 75μs pre-emphasis.
2. Adjust DAC "MTSIN" MTS-INPUT data until the voltage measured is 106 ± 6.0mV RMS.

Stereo Separation Adjustment (SEPAL & SEPAH)

Preparation:

1. Connect an RF signal generator to the RF antenna input.
2. Connect an oscilloscope probe to TP038 (R_out).

Procedure:

1. Set TV to Stereo Mode (in the audio menu).
2. Apply the following signal from the RF signal generator:
Video: 100 IRE flat field, 30% modulation.
Audio: 300Hz, 30% modulation, stereo (left only) (70dB ± 5dB, 75Ω OPEN, P/S 10dB).

Note:

Set the 30% modulation with the pilot light SW and N.R. switches OFF then turn them ON while testing.

3. Adjust MTS low-level separation "SEPAL" DAC data (in the service menu) until the amplitude of the measured waveform on the scope is minimum.
4. Apply the following signal from the RF signal generator:
Video: 100 IRE flat field, 30% modulation.
Audio: 3KHz, 30% modulation, stereo (left only). (70dB ± 5dB, 75Ω OPEN, P/S 10dB).

Note:

Set the 30% modulation with the P.L and N.R. switches OFF then turn them ON while testing.

5. Adjust MTS High-Level Separation "SEPAH" DAC data until the amplitude of the waveform measured on the scope is minimum.
6. Repeat above steps 2 through 5 until the amplitude is at minimum for both signals.

13.8. Clock Adjustment (CLOCK)

Preparation:

Connect the frequency counter from TP1126 (DG-Board) to cold ground.

Note:

Frequency Counter probe capacitance should be 8pF or less.

Procedure:

1. Turn the TV "ON" with the A.C. power applied.
 2. Measure TP1126 for frequency and record the reading.
- Note:**
- Pin 10 measurement must have at least four digits of resolution following the decimal point.
Example: 000.0000
3. Place the TV into service mode for making electronic adjustment, select the clock adjustment DAC CLOCK and change value to 128.
 4. Calculate and set CLOCK based on the following formula:

$$CLOCK = 128 + 0.450 \times 10^6 \times \frac{\{732.422 - TP1126\}}{732.4220}$$

Note:

TP1126 measurement will not change regardless of the value stored in CLOCK.

13.9. JPEG Viewer Software Upgrade

1. With the receiver powered ON, insert the SD service card in the front panel slot, then automatically, a download menu will appear. If the download menu doesn't appear. Enter service mode, display the service menu by pressing POWER on the remote and select "JPEG" DAC register. Select option No. 6 with CH keys to access the "JPEG Program Download" menu.

NOTE:

To abort the download process just press "EXIT" on remote in the "JPEG Program Download" menu.

IMPORTANT:

For better results in this procedure, be sure that the set is already powered ON and if the set is powered OFF, wait at least 10 seconds after turning ON the receiver before inserting the SD service card to the JPEG viewer slot.

2. Select the newest version of software with CH keys, then press OK.

3. A confirmation sign appears asking if the selected version wants to be downloaded, then with VOL keys select "YES" and press OK to start downloading.

IMPORTANT!:

Once that downloading process has begun it cannot be cancelled. during software downloading do not disconnect the a.c. plug from outlet!! , this could result in a permanent damage to the service card and to the receiver as well.

4. Once the downloading is finished, disconnect the AC plug from outlet then remove the SD service card from the slot.
5. Connect again the AC plug to the outlet and turn power ON.
6. Press both OK and POWER buttons on the receiver's front panel to acces to the self-check screen and wait a few seconds.
7. If the JPEG module is working accordingly, a "JPEG OK" sign will appear and within, the last upgrade version of the JPEG viewer software, i. e. "JPEG OK : 01.00.04" .
8. Press any key to exit the self-check screen or unplug AC cord to completely reset.

13.10. JPEG Factory and Service Mode (JPEG)

1. Enter service mode, and with the SD service card already inserted (JPEG viewer slot), from the service menu select "JPEG" DAC register.
2. A screen displaying the "JPEG Factory and Service Mode" menu will appear with 6 options and at the bottom the current JPEG software version.
3. To select one of the options press the CH keys on remote.
4. Option No. 1 will perform an auto test from option No. 2 trough No. 5.
 - SDRAM Test: will perform a test of the internal memory of the JPEG reader device, showing for a few seconds a green screen followed by a magenta screen. If the test is succesfull an OK flag will appear on menu.
 - Color bar Test: this will perform a color display test in the JPEG reader device showing in the screen a color rainbow bar pattern at the top and a black and white pattern at the bottom. If the colors are shown correctly the JPEG color driver is working properly. Press exit on remote to go back to service menu.
 - SD Card Test: this will perform a JPEG picture reading test on the SD Card. The SD card inserted must have pictures with JPEG format to pass the test.
 - PC Card Test: this will perform a JPEG picture reading test on the PC Card. The PC card inserted must have pictures with JPEG format to pass the test.
 - Download: enters to the "JPEG Program Download" menu.
5. Press EXIT to go back to service mode.

14 Service Mode (electronic controls)

This receiver has electronic technology using the IC bus concept. It performs as a control function and it replaces many mechanical controls. Instead of adjusting mechanical controls individually, many of the control functions are now performed by using "on screen display menu". (The service adjustment mode.)

NOTE:

It is suggested that the technician reads all the way through and understand the following procedure for entering/exiting the service adjustment mode; then proceed with the instructions working with the receiver. When becoming familiar with the procedure, the flow chart for service mode may be used as a quick guide.

14.1. Entering to service mode:

When minor adjustments need to be done to the electronic controls, the method for entering the service mode without removal of the cabinet back is as follows, using the remote control:

Alternate method to enter service mode:

Press "VOL" (-) on TV and "RECALL" button on remote control simultaneously for at least 3 seconds.

Usual method to enter service mode

1. Select SET-UP icon and select CABLE mode.
2. Select TIMER icon and set SLEEP time for 30 Min.
3. Press "OK" then "VOL" (+) to exit menus.
4. Tune to the Channel 124.
5. Adjust VOLUME to minimum (0).
6. Press "VOL" (-) on receiver. Red "CHK" appears in upper left corner.

To toggle between aging and service modes:

While the "CHK" is displayed on the left top corner of the screen, press "TV/VIDEO" and "VOL (+)" on the TV simultaneously will toggle between the modes. Red "CHK" for service mode and yellow "CHK" for aging.

7. Press POWER on the remote control to display the service adjustment modes menu, select adjustment by pressing the "VOL" right/left buttons and "CH" up/down buttons on the remote and OK to enter the adjustment.

MODE	480i	JUST	4:3	ZOOM
MTS	DW	MTSIN	SEPAL	SEPAH
CLOCK	CLOCK	B-Y_G	TINT	R-Y_A
VIDEO	COLOR	BRIGHT	CONT	
ADV	Y-G	PR-G	PB-G	WB
	Y-OS	PR-OS	PB-OS	
	H-POS	V-POS	CW-I	
OTHER	DDP	JPEG		
EFP	AREA	IN▶EX	EX▶IN	

Service mode menu

NOTE:

Some adjustments are available only in some modes (480i, 480p, 1080i); it is needed to apply the format; A 1080i, 480p, 480i pattern can be obtained from Panasonic's TU-DST51 set-top box DTV decoder.

14.2. Exiting the service mode:

This TV goes out from service mode when it is turned OFF.

Resetting

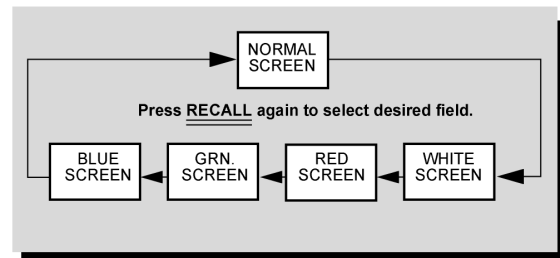
Press VOLUME (-) on TV and OK on the remote simultaneously for at least 3 seconds. The receiver momentarily shuts off; then comes back on tuned to channel 3 with a preset level of sound. Any programmed channels, channels caption data and some others user defined settings will be erased when exited receiver is reset.

IMPORTANT NOTE

Always check that TV exits the service mode.

To check colors:

When in service mode (red "CHK" displayed) press RECALL on the remote control to enter the purity field check mode.



Color check

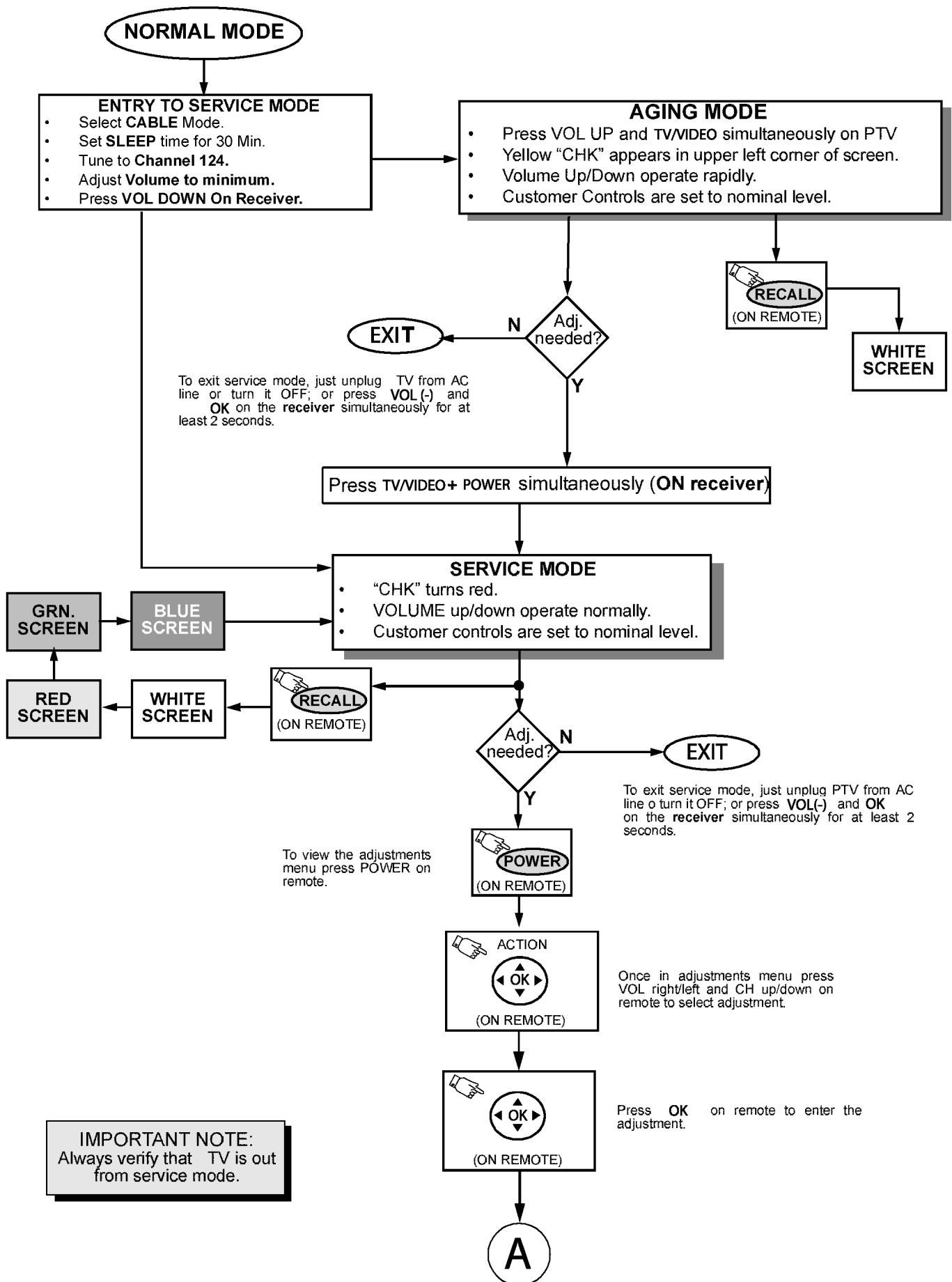
14.3. Service adjustment default values for items

REGISTER	DESCRIPTION	FORMAT		
		480p	4:3, FULL, JUST, SPLIT	ZOOM
MTSIN	INPUT LEVEL		1F	N/A
SEPAL	LOW-LEVEL SEPARATION		06	N/A
SEPAH	HIGH-LEVEL SEPARATION		20	N/A
CLOCK	CLOCK		128	N/A
COLOR	COLOR		20	N/A
B-Y_G	MAGENTA TINT ADJ		3D	N/A
TINT	TINT		80	N/A
R-Y_A	YELLOW TINT ADJ		80	N/A
BRIGH	BRIGHT		08 00	N/A
CONT	CONTRAST		01 EE	N/A
Y-G	Y-G	00 BB		N/A
PR-G	PR-G	00 B0		N/A
PB-G	PB-G	00 B0		N/A
Y-OS	Y-OS	00 29		N/A
PR-OS	PR-OS	02 00		N/A
PB-OS	PB-OS	02 00		N/A
WB	WHITE BALANCE		00	
H-POS	HORIZONTAL POSITION		1F	
V-POS	VERTICAL POSITION		1F	
CW-I	COLOR WHEEL INDEX		00 EE	
DDP	SELECT THIS DAC, THEN PRESS "RECALL" TO DISPLAY AND CHANGE INTERNAL PATTERNS			

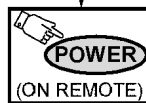
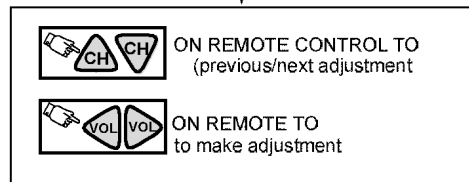
NOTE:

The above table shows the default values for the service items, this values can change depending on the serviced TV.

14.4. Instructional flow for service mode



A



Press POWER or **OK** on remote to
exit the adjustment.

EXIT

IMPORTANT NOTE:
Always verify that TV is out
from service mode.

To exit service mode, just unplug TV from AC
line or turn it OFF; or press **VOL(-)** and
OK on the **receiver** simultaneously for at
least 2 seconds.

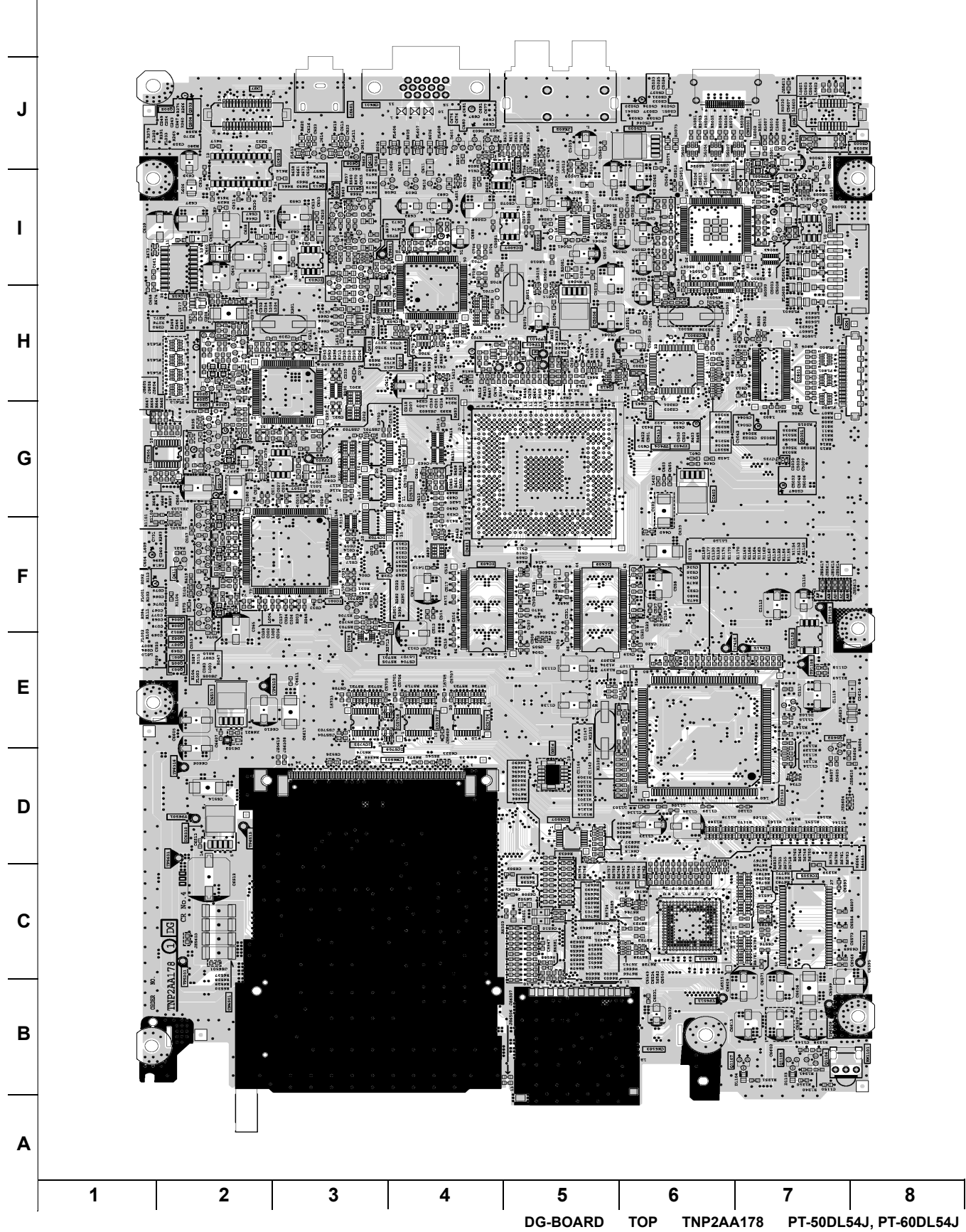
15 Reference of PDF links color

DESCRIPTION OF PDF LINK COLORS	
TYPE	DESTINATION
SCHEMATIC	
YELLOW ON IC	IC ON PCB
YELLOW ON CONNECTOR	CONNECTOR ON PCB
YELLOW ON SCHEMATIC	PCB
CYAN	WAVEFORM
GREEN ON SIDE	SCHEMATIC CONTINUED
GREEN ON CONNECTOR	CONNECTOR CONNECTION
BLUE ON IC	VOLTAGE
PCB	
BLUE ON IC	IC ON SCHEMATIC
BLUE ON CONNECTOR	CONNECTOR ON SCHEMATIC
BLUE ON PCB	SCHEMATIC
GREEN ON SIDE	PCB CONTINUED
BLOCK DIAGRAMS	
GREEN ON IC	IC ON SCHEMATIC
GREEN ON SIDE	BLOCK DIAGRAM CONTINUED

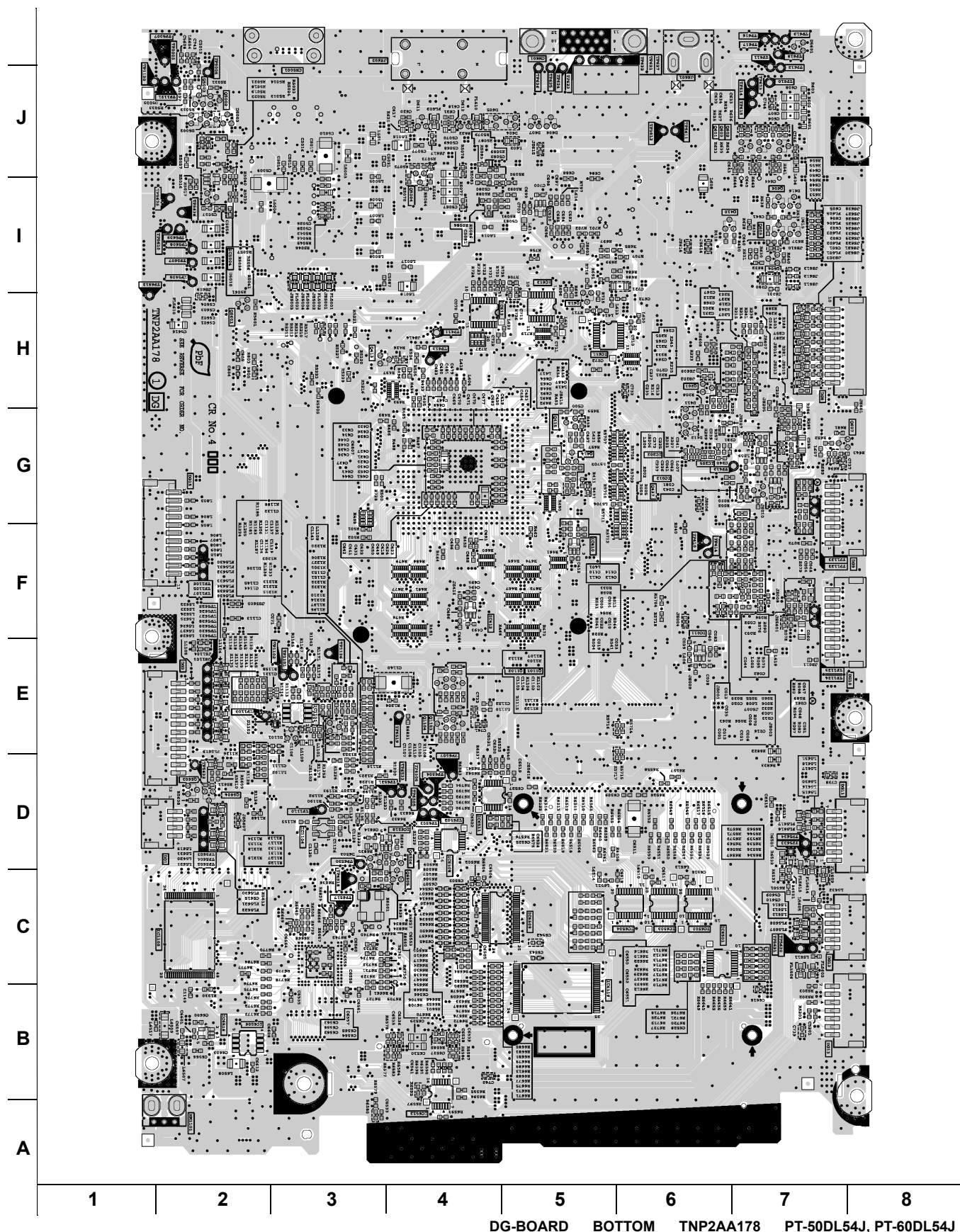
16.1. CW, K, ZJ, PK-Board



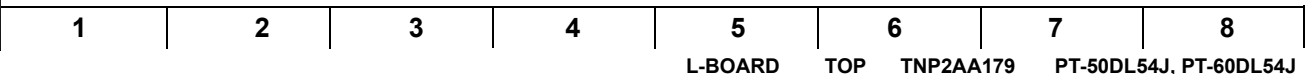
16.2. DG-Board Top Side



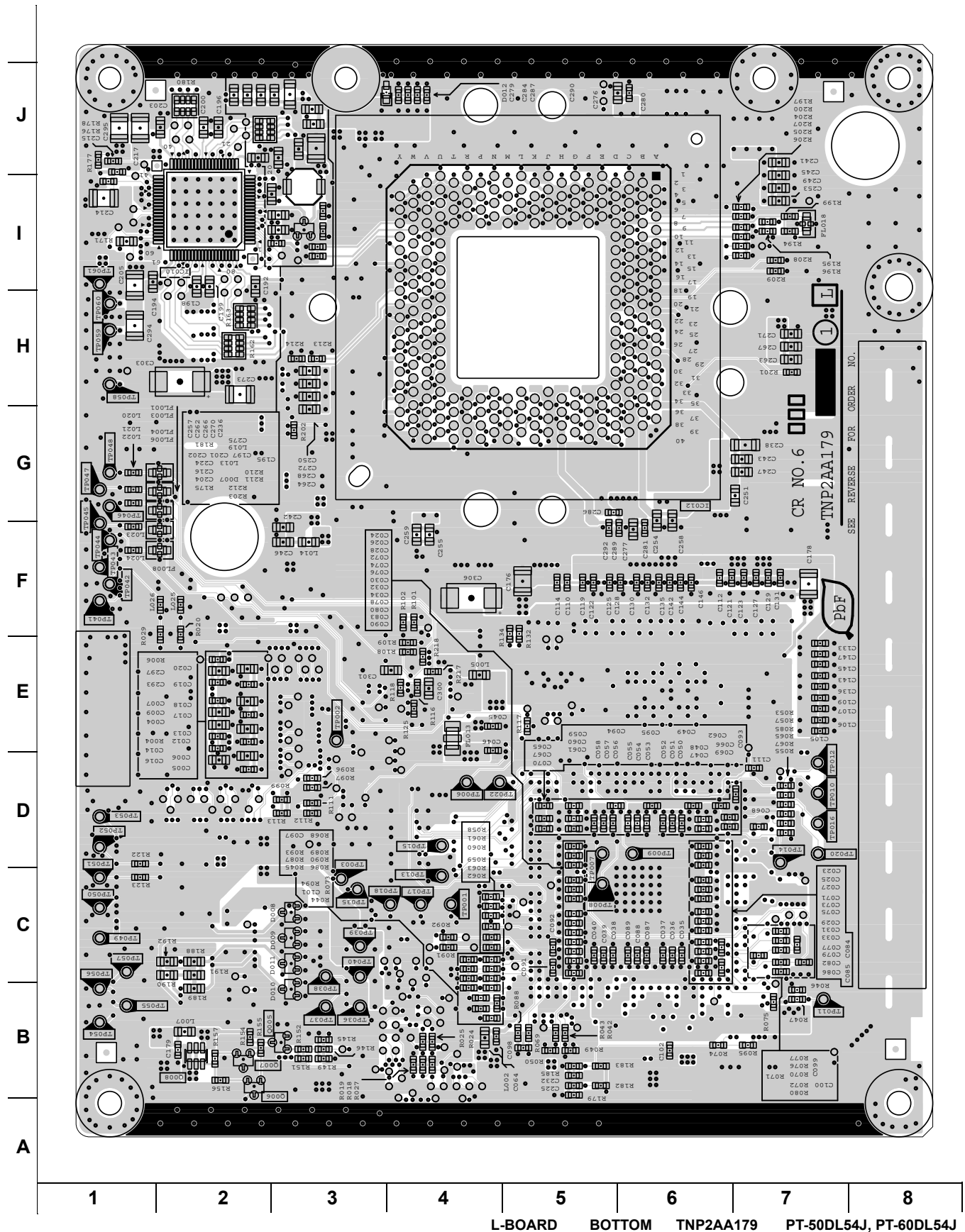
16.3. DG-Board Bottom Side



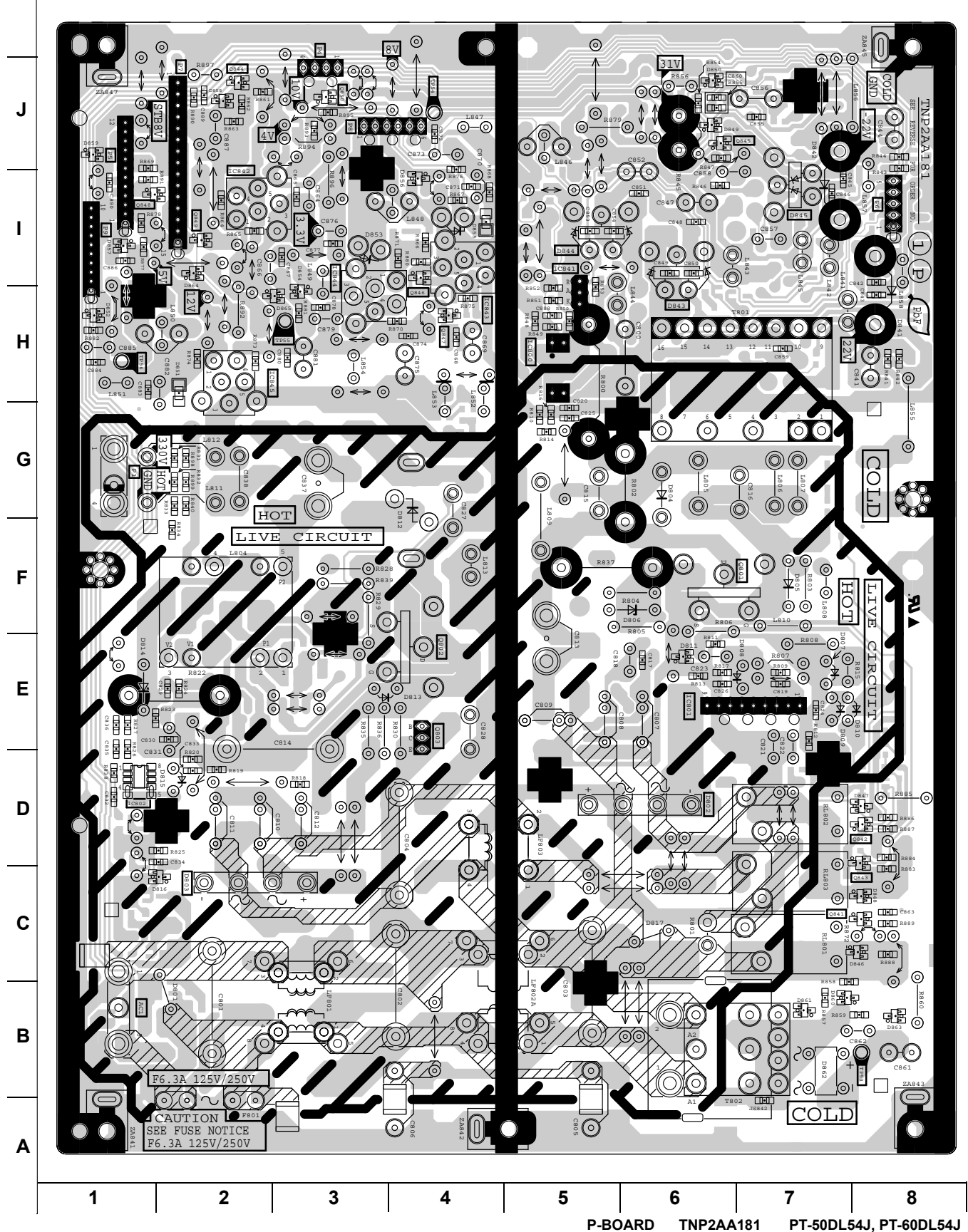
A
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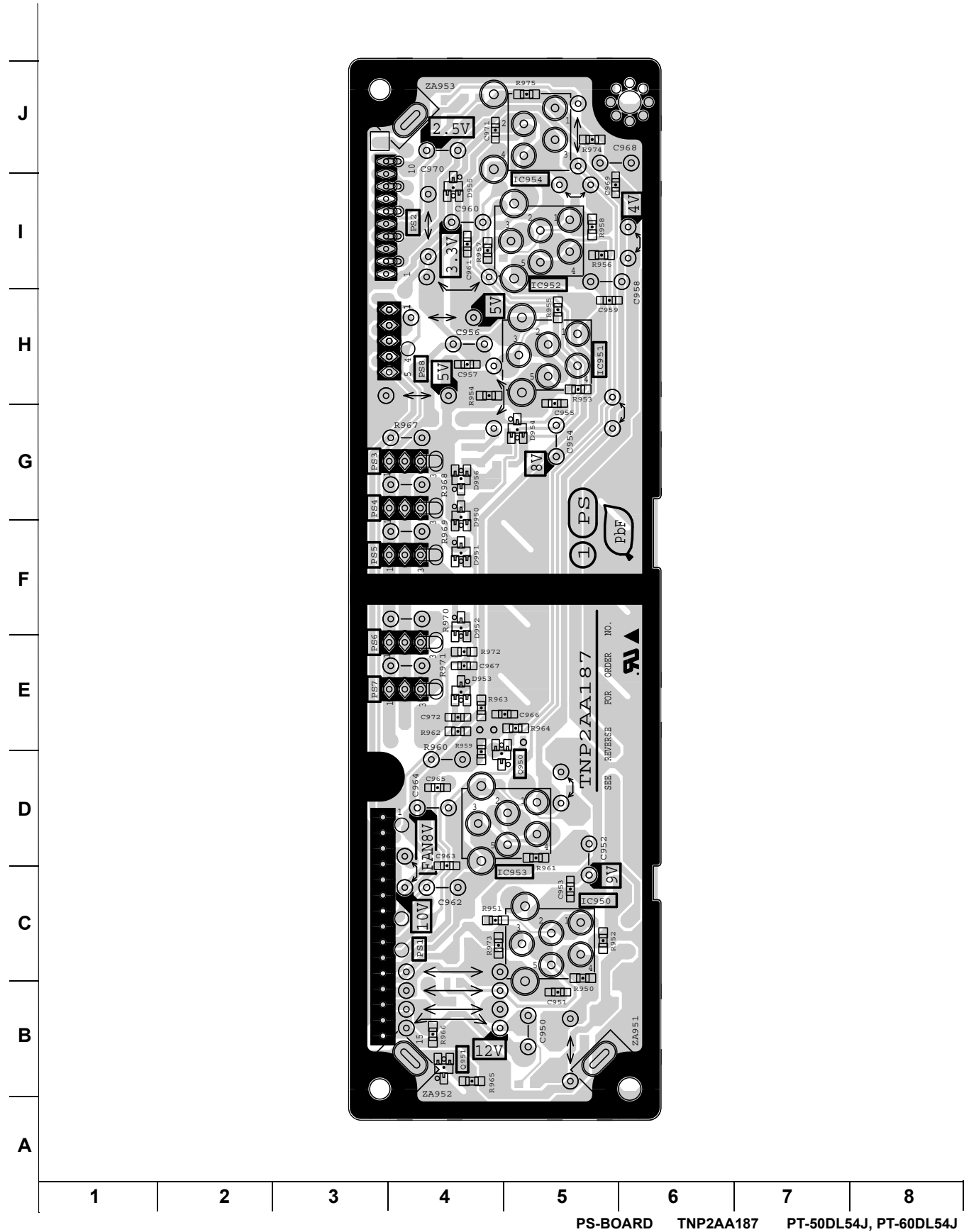
16.5. L-Board Bottom Side



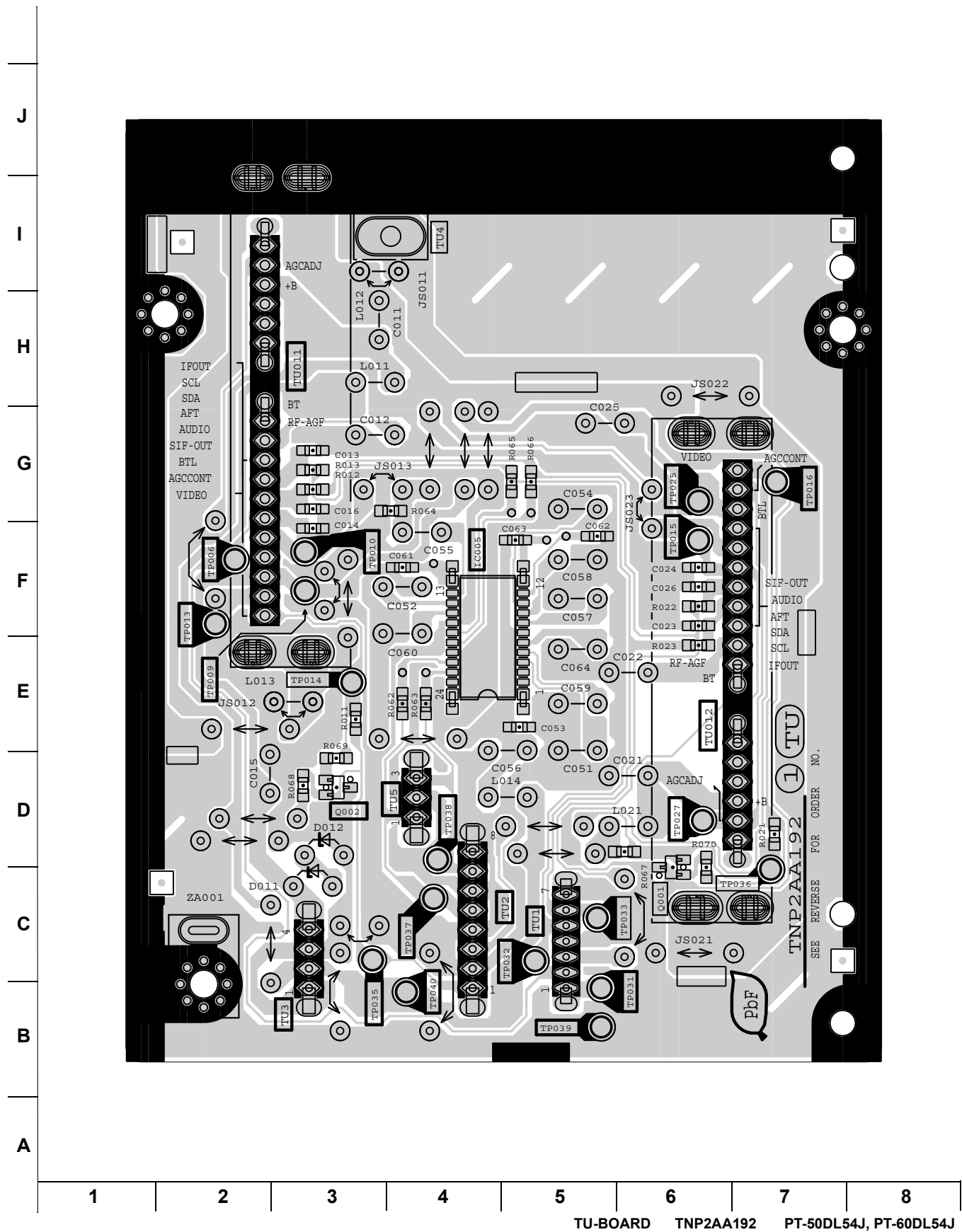
16.6. P-Board



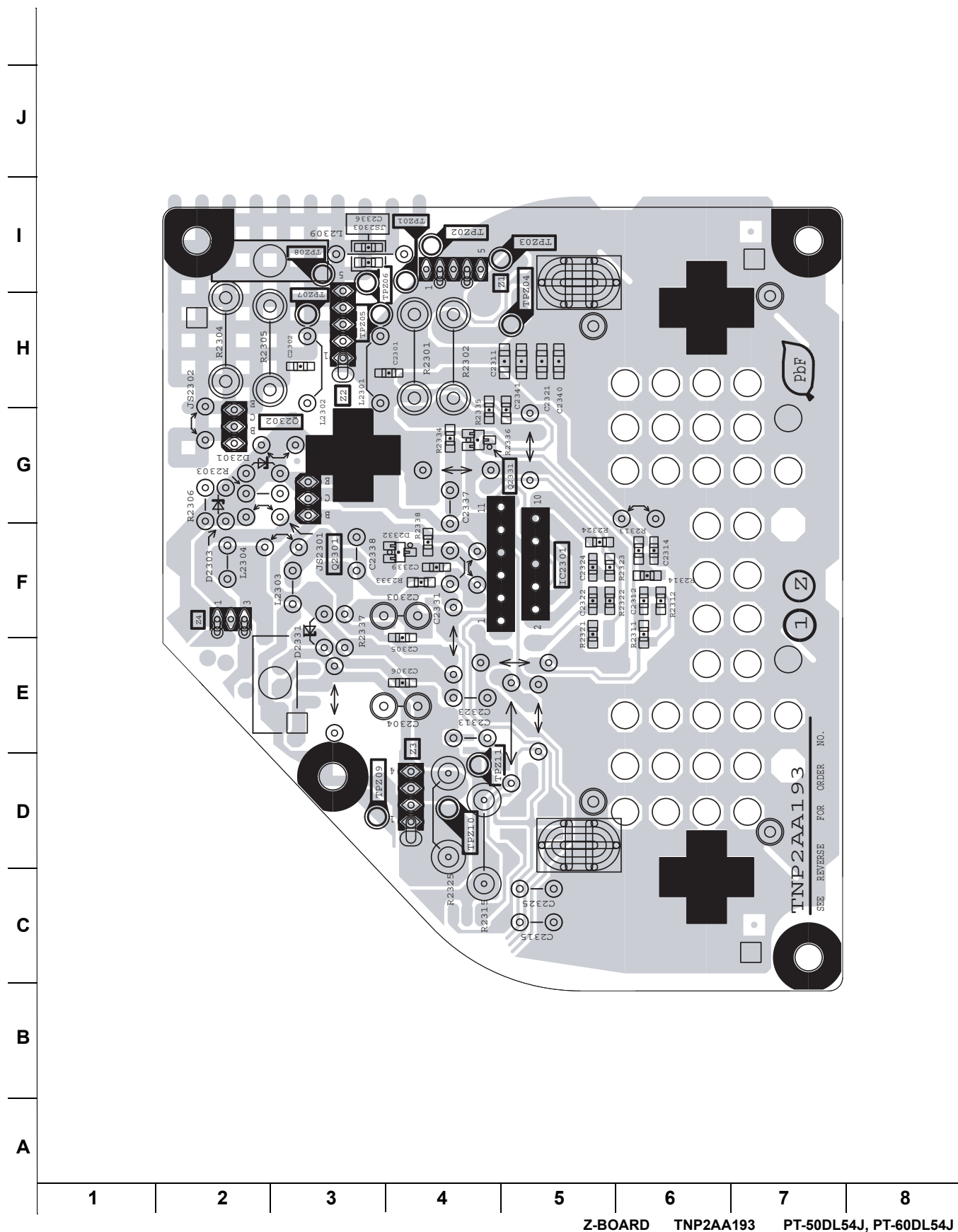
16.7. PS-Board



16.8. TU-Board

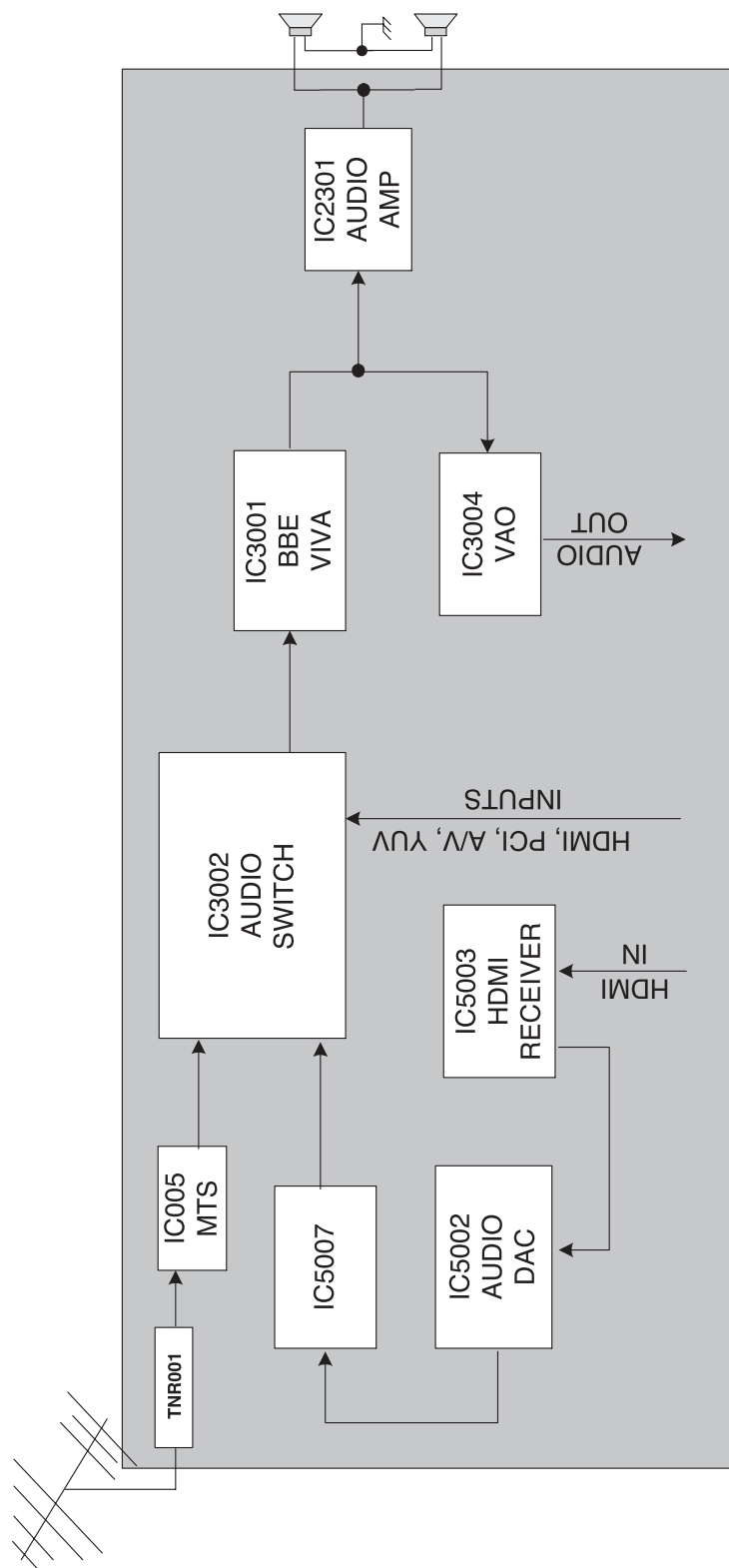


16.9. Z-Board



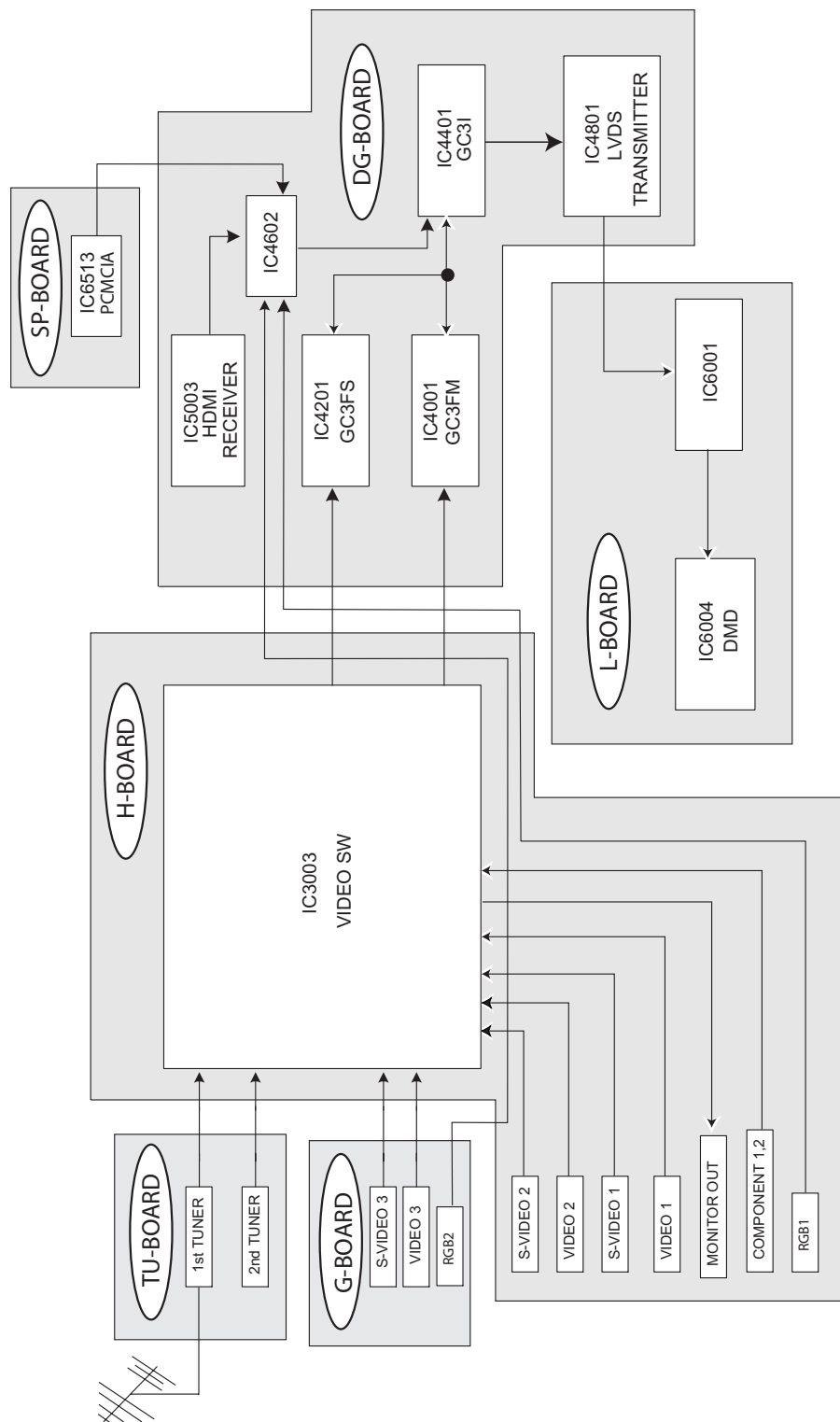
17 Block diagrams

17.1. Audio block diagram



AUDIO BLOCK DIAGRAM PT-50DL54J, PT-60DL54J

17.2. Video block diagram



VIDEO BLOCK DIAGRAM PT-50DL54J, PT-60DL54J

18 Schematic diagrams

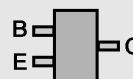
18.1. Schematic diagrams notes

Notes:

IMPORTANT SAFETY NOTICE

THIS SCHEMATIC DIAGRAM INCORPORATES SPECIAL FEATURES THAT ARE IMPORTANT FOR PROTECTION FROM X-RADIATION, FIRE AND ELECTRICAL SHOCK HAZARDS. WHEN SERVICING IT IS ESSENTIAL THAT ONLY MANUFACTURERS SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS DESIGNATED WITH A \triangle IN THE SCHEMATIC.

CHIP TRANSISTOR LEAD DESIGNATION



SCHEMATIC NOTES

1. Resistors are carbon 1/4W unless noted otherwise.
 2. Capacitors are ceramic 50V unless noted otherwise.
 3. Coil value notes is inductance in μH .
 4. Test point indicated by \uparrow ; Test point but no pin \uparrow .
 5. Components indicated with \triangle are critical parts and replacement should be made with manufacture specified replacement parts only.
 6. **—** (BOLD LINE) indicates the route of B+ supply.
 7. The schematic diagrams are current at the time of printing and are subject to change without notice.
 8. Ground symbol \downarrow indicates **HOT GROUND CONNECTION**; \nwarrow indicates COLD GROUND.
- NOTE: All other component symbols are used for engineering design purposes.*

VOLTAGE MEASUREMENTS

1. Voltage measurement:
 - AC input to the Receiver is 120V. NTSC (HD, 1125i & 525P when applicable) signal generator is connected to the antenna of the Receiver. (Color bar pattern of 100 IRE white and 7.5 IRE black.)
 - All Picture and Audio adjustments are set to Normalize.
 - TV ANT/CABLE - (Set-Up Menu) in TV/ANT Mode
 - Volume - Min.
 - TV/Video SW - TV position
 - Audio Mode - Stereo
 2. Ground symbol \downarrow indicates ground lead connection of meter. Incorrect ground connection will result in erroneous readings.
- CAUTION: Incorrect ground connection of the test equipment will result in erroneous readings.**

WAVEFORM MEASUREMENTS

1. $\textcircled{3}$ indicates waveform measurement. (Measurement can be taken at the best accessible location in common to the indicated point.)
 2. Taken with an NTSC signal generator connected to the antenna terminal. (NTSC color bar pattern of 8 bars of EIA colors, 100 IRE white and 7.5 IRE black.)
 3. Customer Controls (Picture/Audio Menu) are set to Normalize. Volume is set to "MIN".
 4. All video and color waveforms are taken with a wideband scope and a probe with low capacitance (10 to 1). Shape and peak altitudes may vary depending on the type of Oscilloscope used and its settings.
 5. Ground symbol \downarrow shown on waveform number indicates (Hot) ground lead connection of the Oscilloscope.
- CAUTION: Incorrect ground connection of the test equipment will result in erroneous readings.**

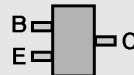
18.2. Notas de los diagramas esquematicos

Notas

NOTA DE SEGURIDAD

LOS DIAGRAMAS ELÉCTRICOS INCLUYEN CARACTERÍSTICAS ESPECIALES MUY IMPORTANTES PARA LA PROTECCIÓN CONTRA RAYOS-X, QUEMADURAS Y DESCARGAS ELÉCTRICAS. CUANDO SE DE SERVICIO ES IMPORTANTE USAR PARA REEMPLAZO DE COMPONENTES CRITICOS, SOLO PARTES ESPECIFICADAS POR EL FABRICANTES. LOS COMPONENTES CRITICOS ESTAN SEÑALADOS EN LOS DIAGRAMAS POR EL SIMBOLO \triangle .

IDENTIFICACIÓN DE TERMINALES PARA TRANSISTORES EN CHIP



NOTAS DE LOS DIAGRAMAS

1. Las Resistencias son de Carbón de 1/4W, a menos que se indique otra característica.
 2. Los Capacitores son de Cerámica para 50V, a menos que se indique otra característica.
 3. El valor indicado de las Bobinas es la inductancia expresada en μ H.
 4. Los puntos de prueba en la terminal de algún componente son indicados por \uparrow . Los puntos de prueba fuera de los componentes se indican con $\dot{\uparrow}$.
 5. Los componentes señalados con el símbolo \triangle son considerados componentes críticos y deben ser reemplazados sólo con las partes especificadas por el fabricante.
 6. **—— (LINEA GRUESA)** indica las líneas de alimentación de los Voltajes B+.
 7. Los diagramas eléctricos están sujetos a cambio sin previo aviso.
 8. El símbolo \downarrow indica que es una conexión a **Tierra Caliente** y el símbolo \uparrow indica conexión a **Tierra Fría**.
- NOTA:** Los demás símbolos de componentes incluidos son usados con fines de diseño.

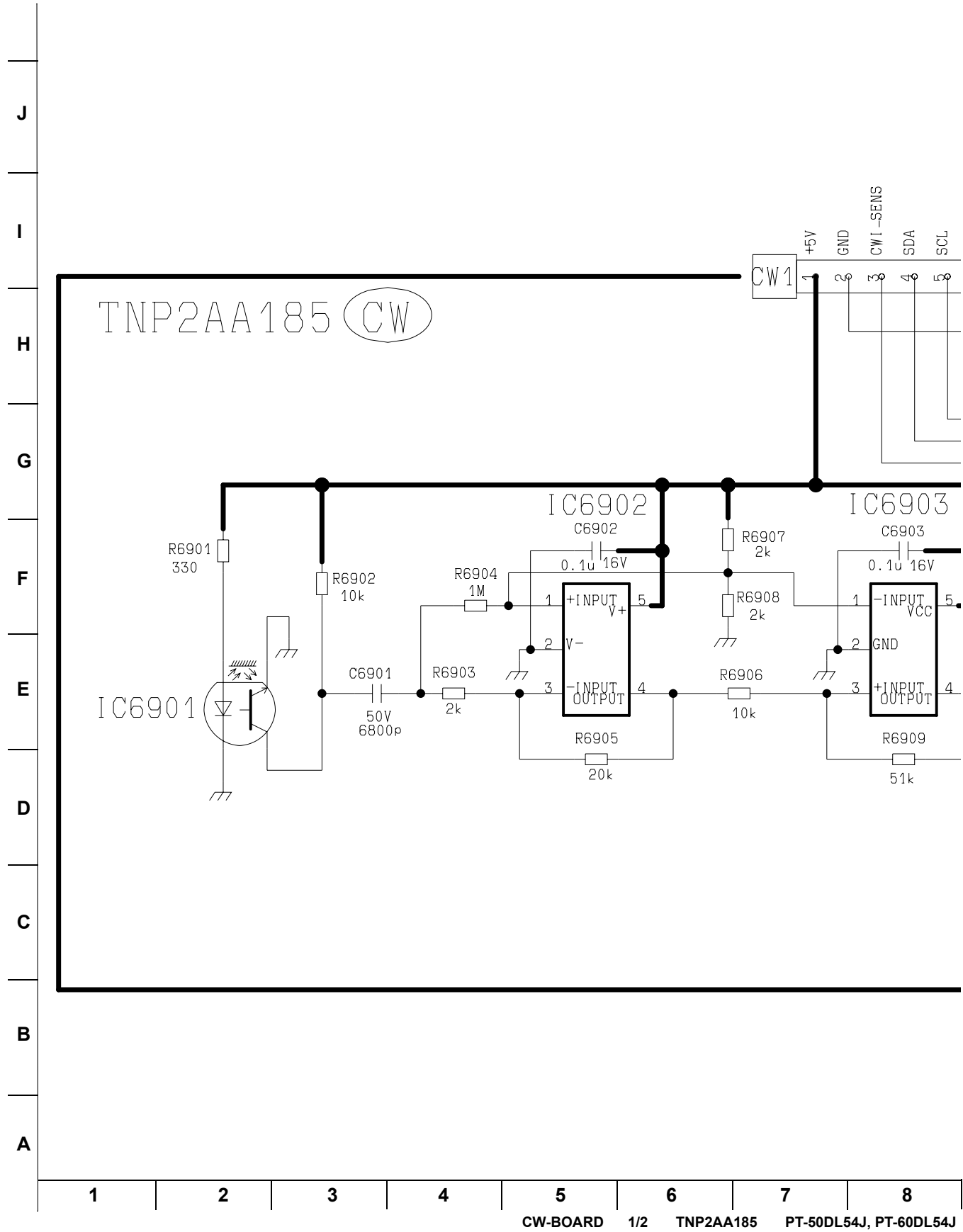
MEDICIÓN DE VOLTAJES

1. Medición de voltaje:
 - El voltaje de entrada al Receptor es de 120V de Corriente Alterna. Un generador de patrones con formato NTSC se conecta a la entrada de la antena. (Patrón de Barras de Colores con 100 IREs para el Blanco y 7.5 IREs para el Negro.)
 - Los ajustes de los Menus Picture y Audio se normalizan. En el Menú Set-Up, en la opción ANTENA, se selecciona el modo de CABLE. El nivel de Volumen se minimiza. De los modos TV y Video, seleccionar el modo TV. Seleccionar modo Estereo del Audio.
 2. Las mediciones de los voltajes son nominales y pueden variar hasta 10% en componentes en funcionamiento. Las lecturas de los voltajes pueden variar por la potencia de la señal y el contenido de la imagen.
 - Las fuentes de voltajes son nominales.
- El símbolo \downarrow indica el tipo de tierra que se utiliza en la conexión del medidor.
- PRECAUCION:** Si no se utiliza la conexión a la tierra adecuada, se obtendrán mediciones equivocadas y podría dañar el equipo de medición.

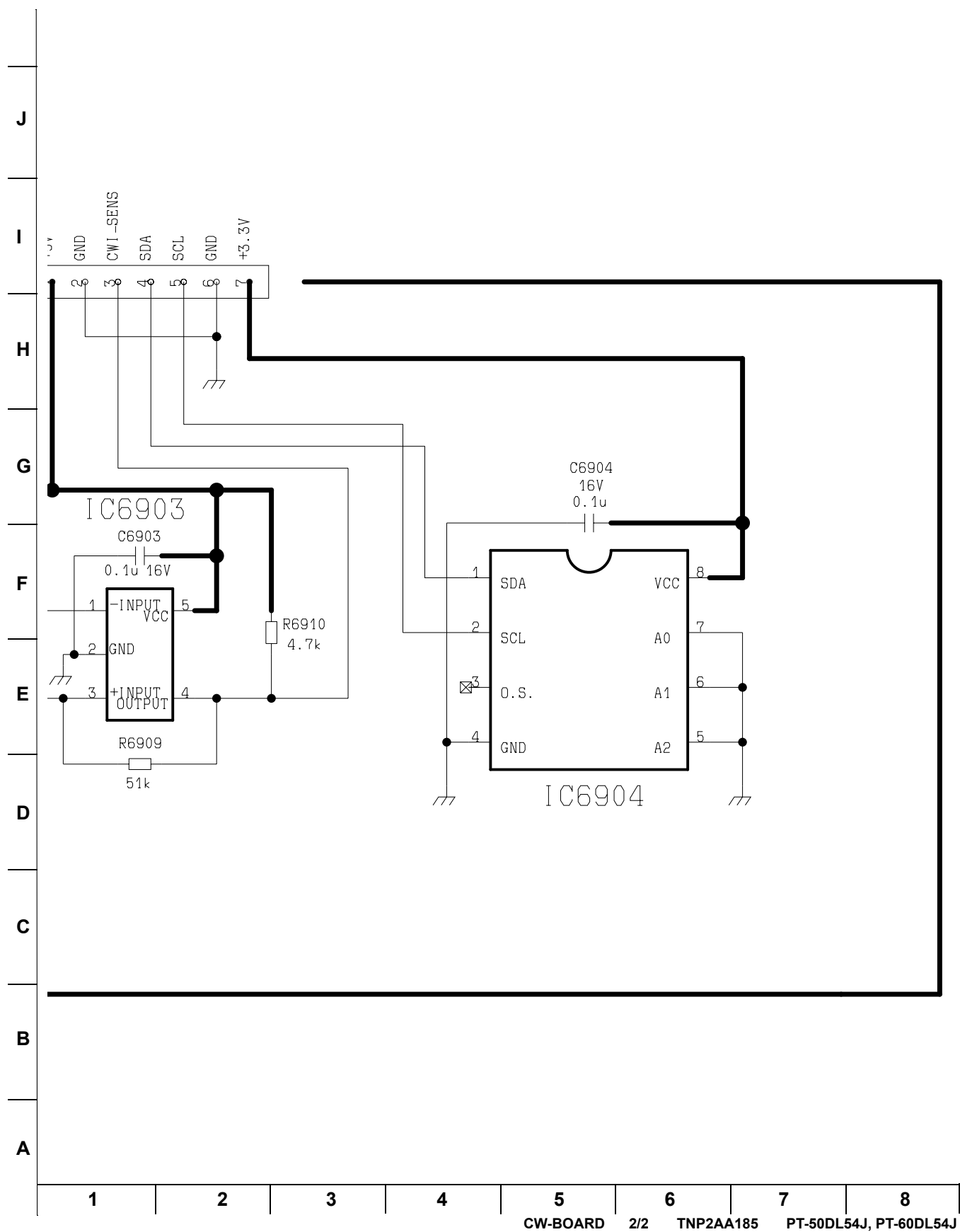
MEDICIÓN DE FORMAS DE ONDA

1. Un símbolo como $\textcircled{3}$ indica el punto para medir una señal. (La medición puede hacerse en el punto con mayor accesibilidad, siempre que sea común al indicado.)
 2. Se midieron utilizando un generador con formato NTSC conectado a la terminal de la antena. (Patrón de 8 Barras de Colores EAI, formato NTSC de 100 IREs para el Blanco y 7.5 IREs para el Negro.)
 3. Los ajustes de usuario de los Menus PICTURE y AUDIO se normalizaron. Posteriormente el nivel de volumen se ajusta al mínimo.
 4. Las formas de onda de Video y Color fueron tomadas con un osciloscopio de banda alta y con un punta de prueba de baja capacitancia (10 a 1). La forma y amplitud de las ondas puede variar según el tipo de osciloscopio que se utilice y sus características.
 5. El símbolo de tierra \downarrow que aparece junto al número de la forma de onda, indica que se utiliza conexión a **Tierra Caliente** en el extremo negativo de la punta de prueba.
- PRECAUCION:** Si no se utiliza la conexión a la tierra adecuada, se obtendrán mediciones equivocadas y podría dañar el equipo de medición.

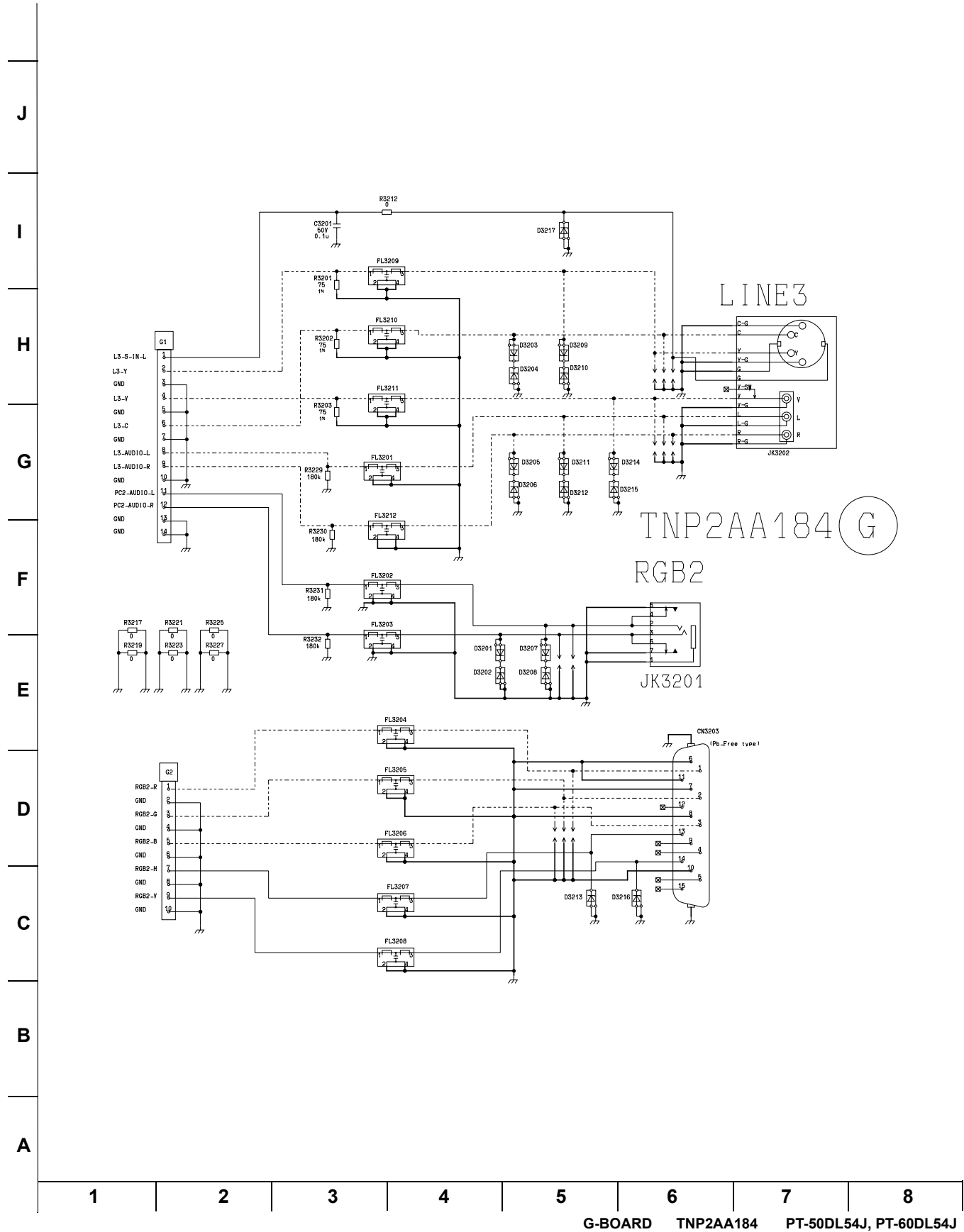
18.3. CW-Board schematic 1 of 2



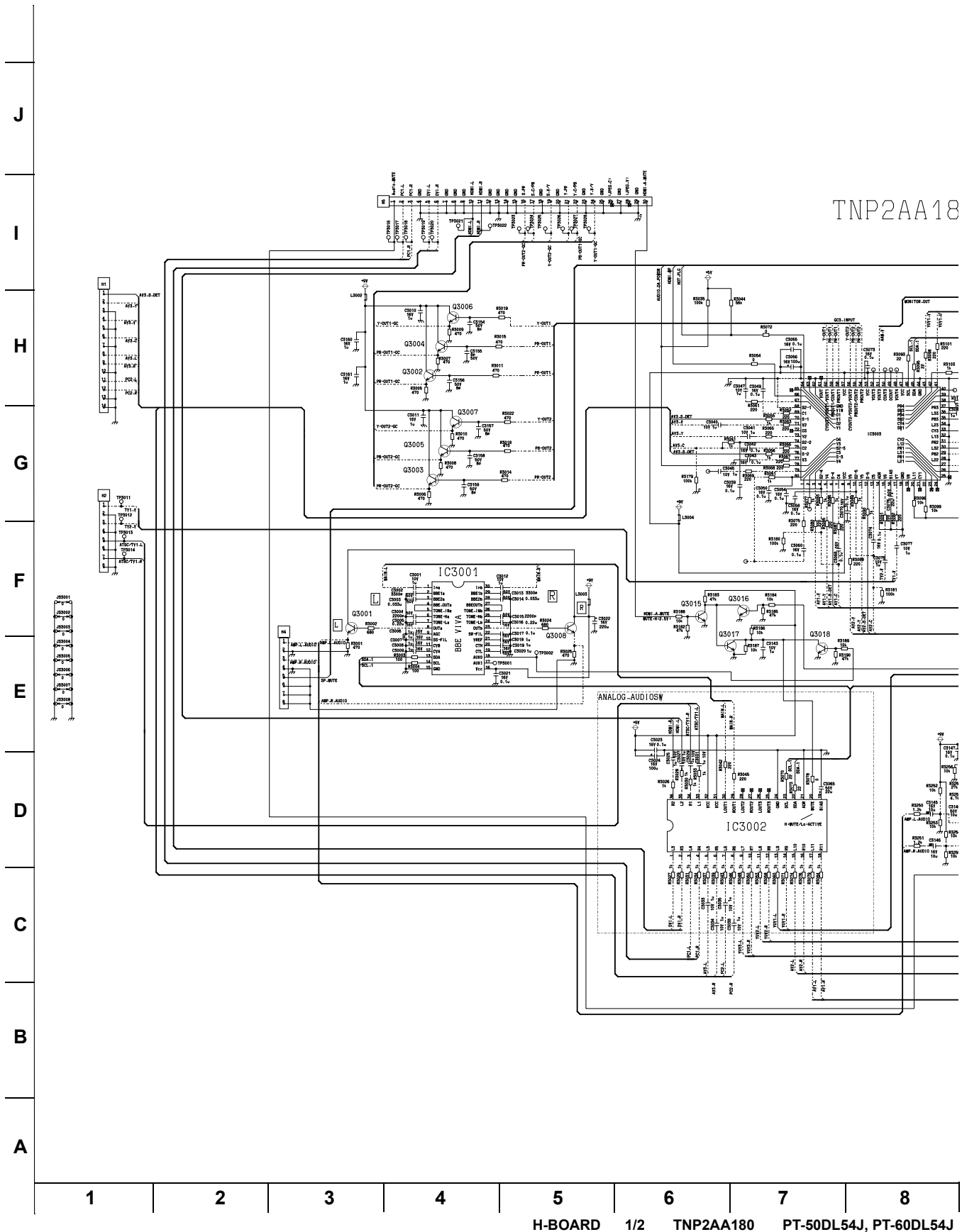
18.4. CW-Board schematic 2 of 2



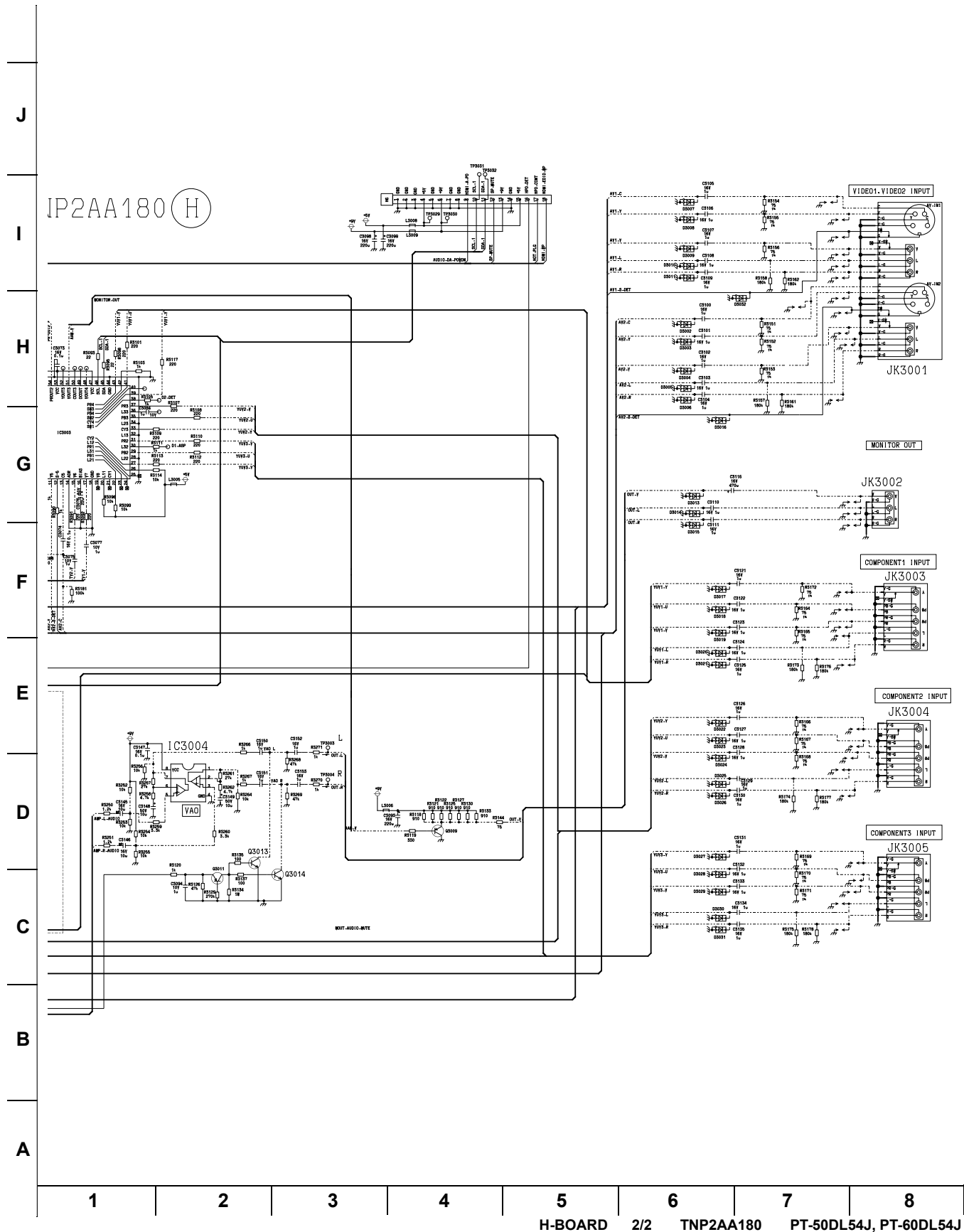
18.5. G-Board schematic



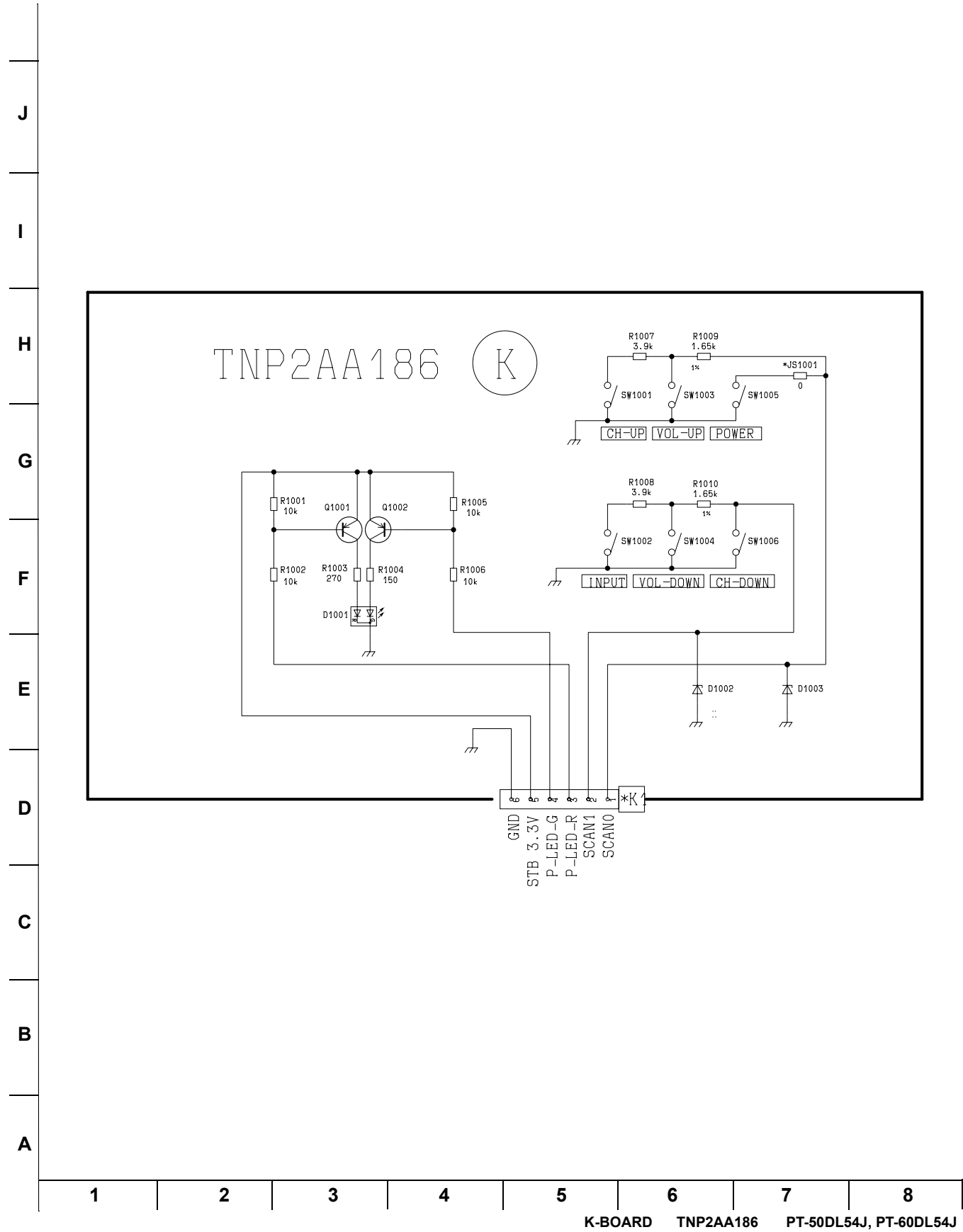
18.6. H-Board schematic 1 of 2



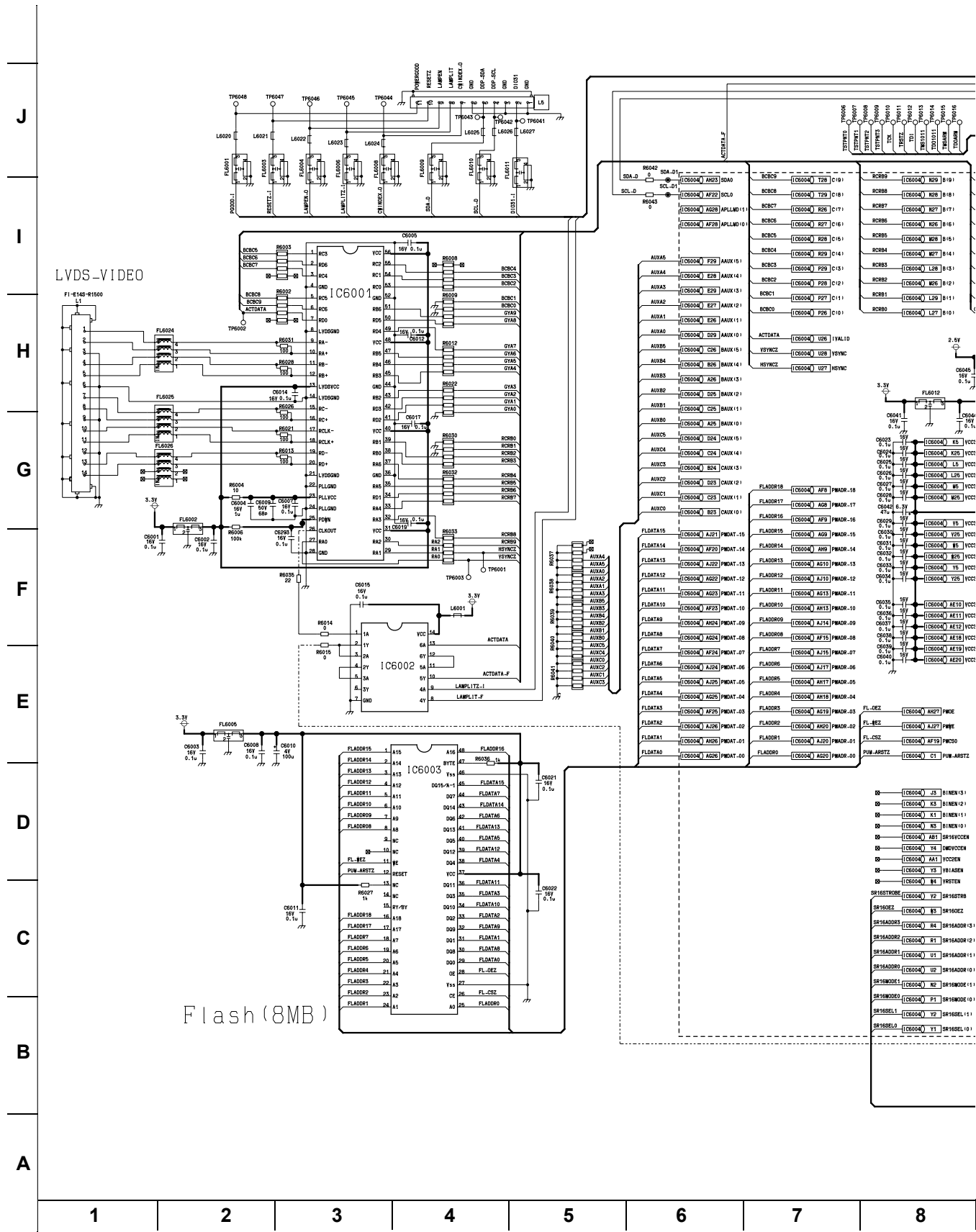
18.7. H-Board schematic 2 of 2



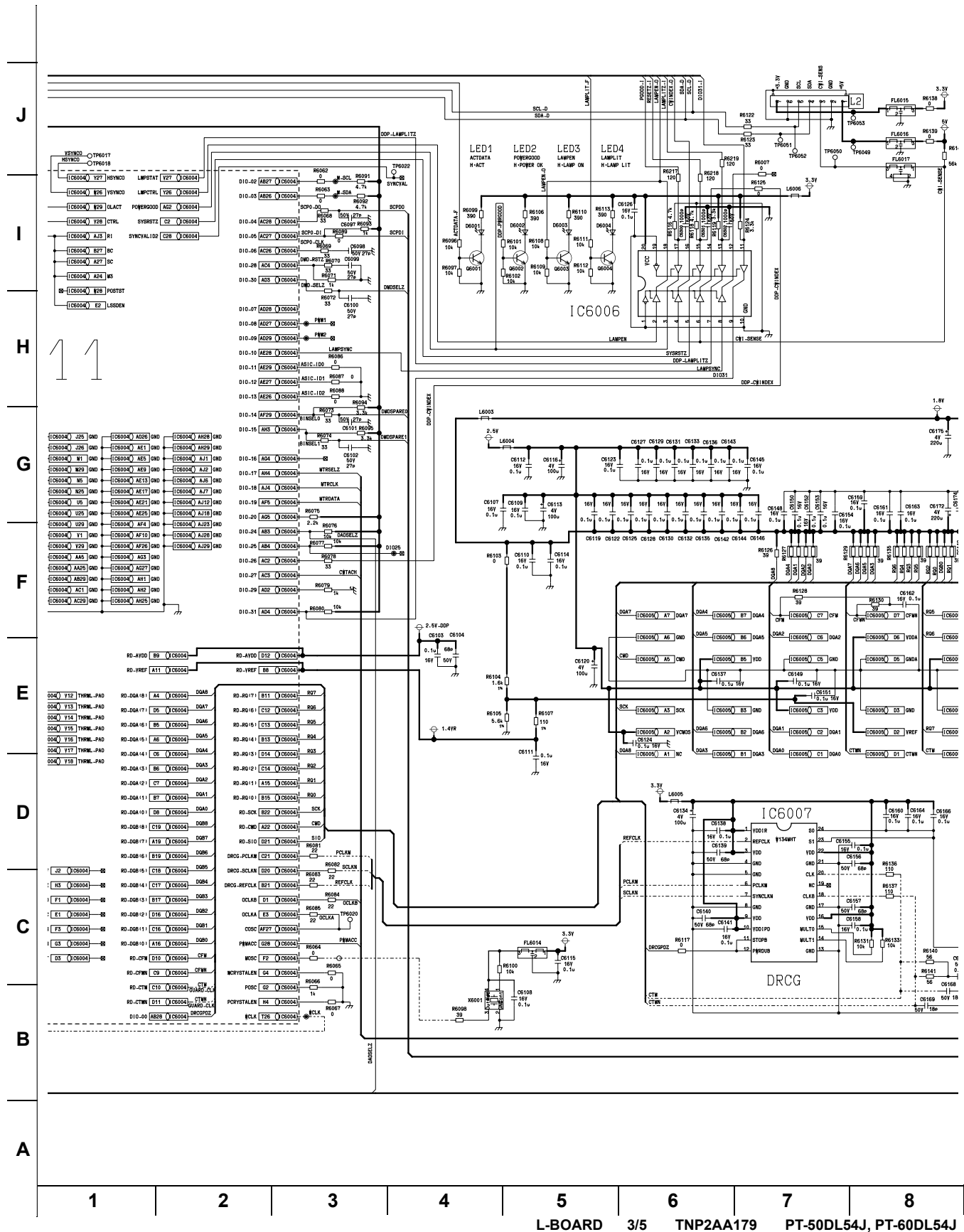
18.8. K-Board schematic



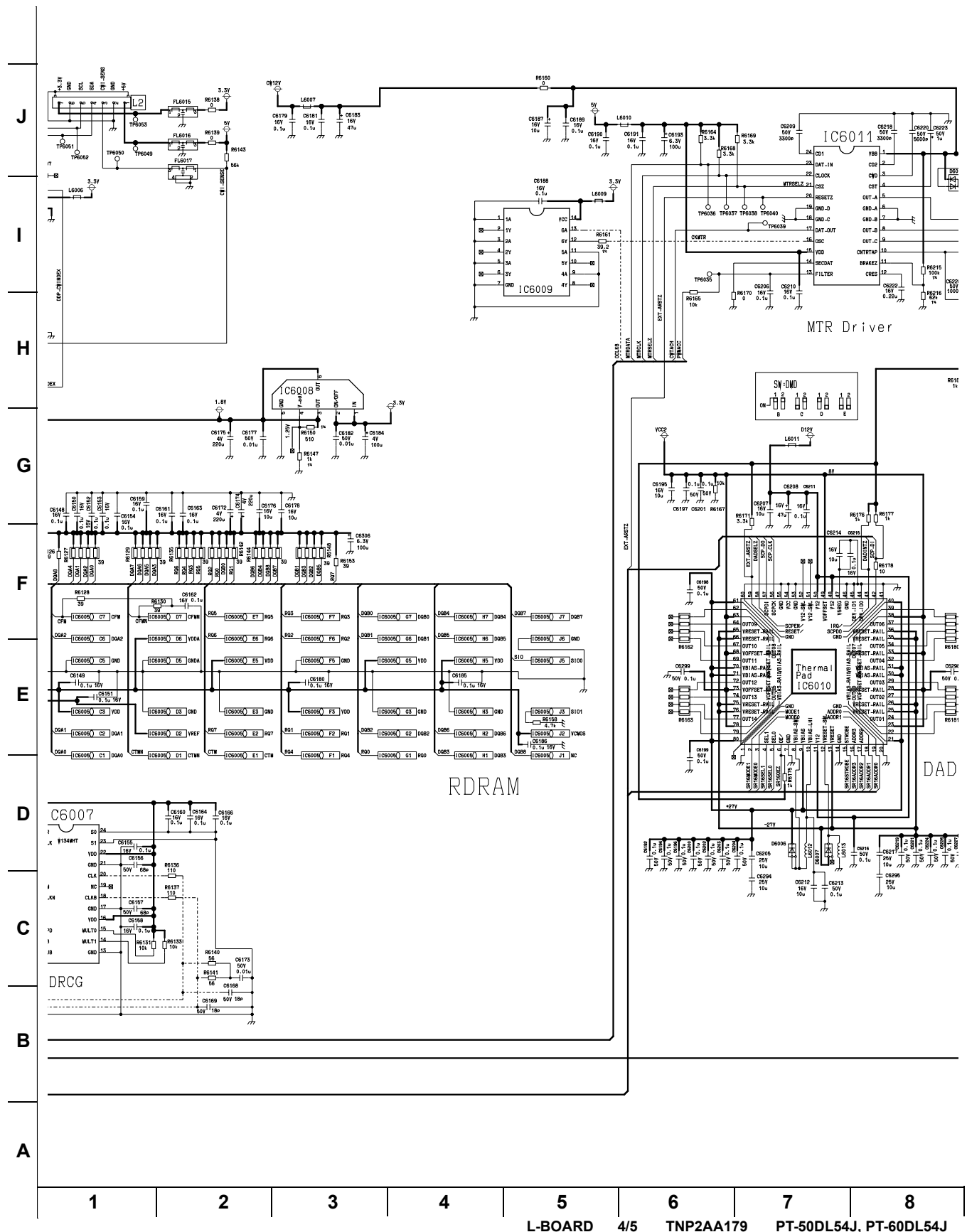
18.9. L-Board schematic 1 of 5



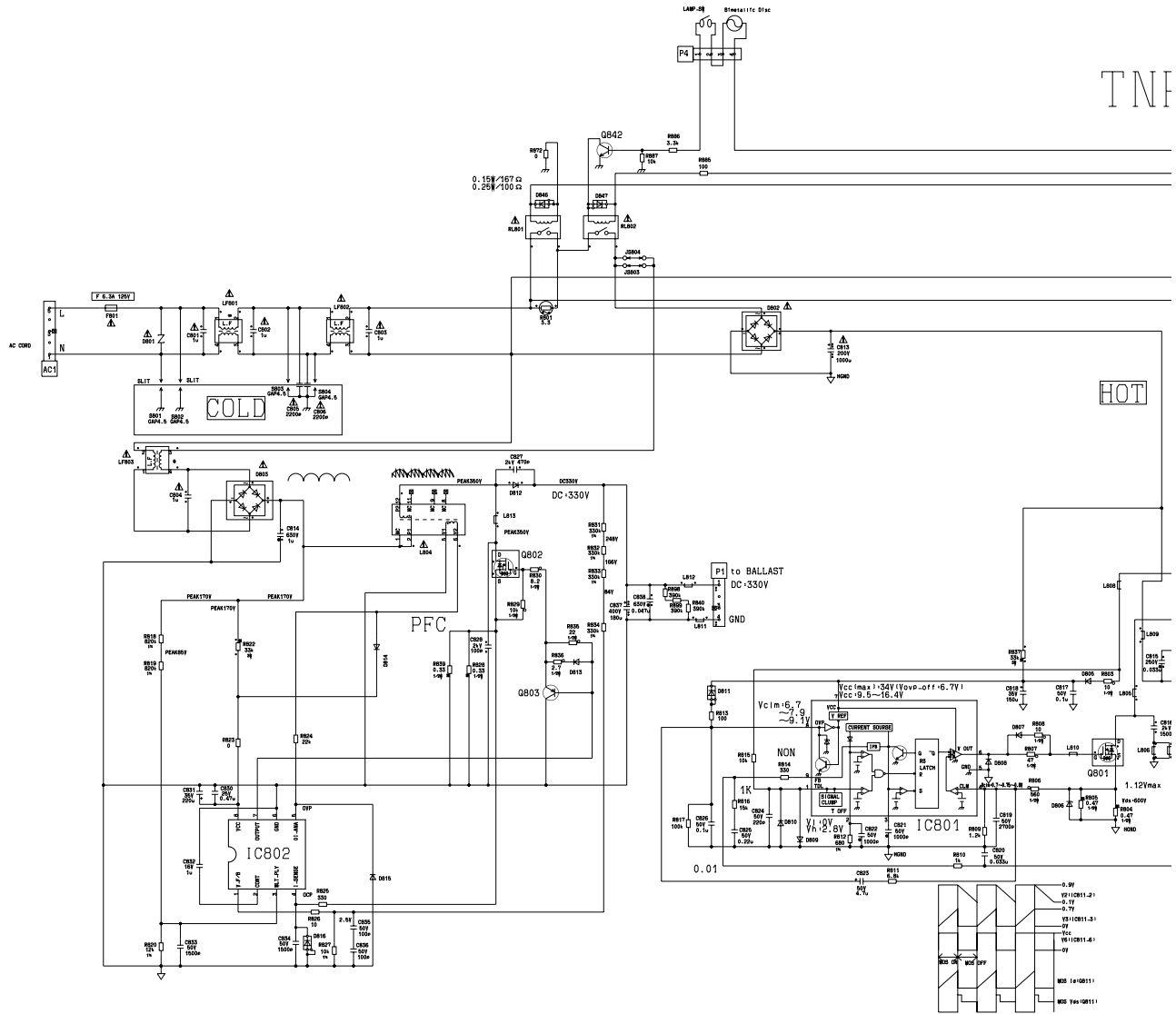
18.11. L-Board schematic 3 of 5



18.12. L-Board schematic 4 of 5

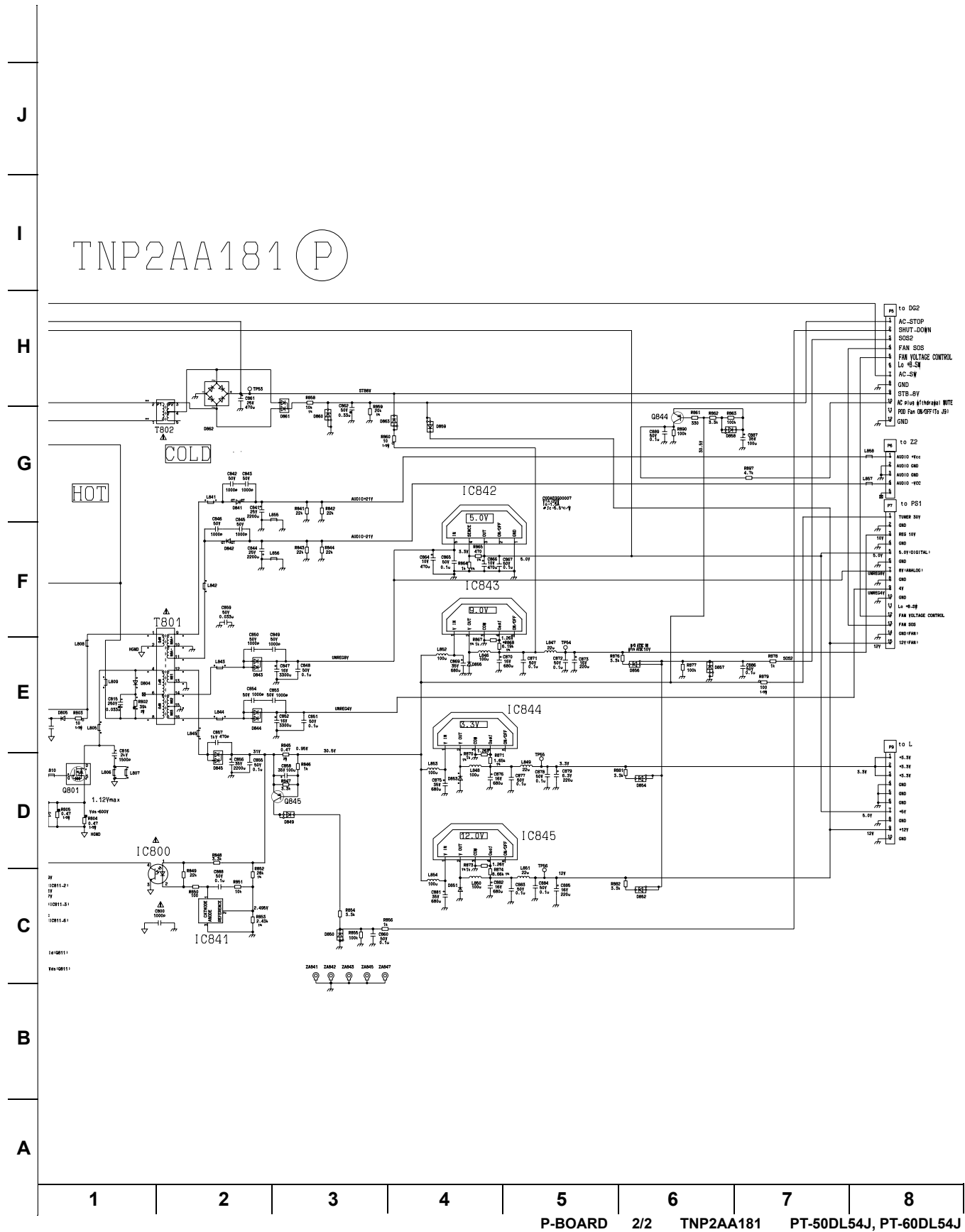


18.14. P-Board schematic 1 of 2

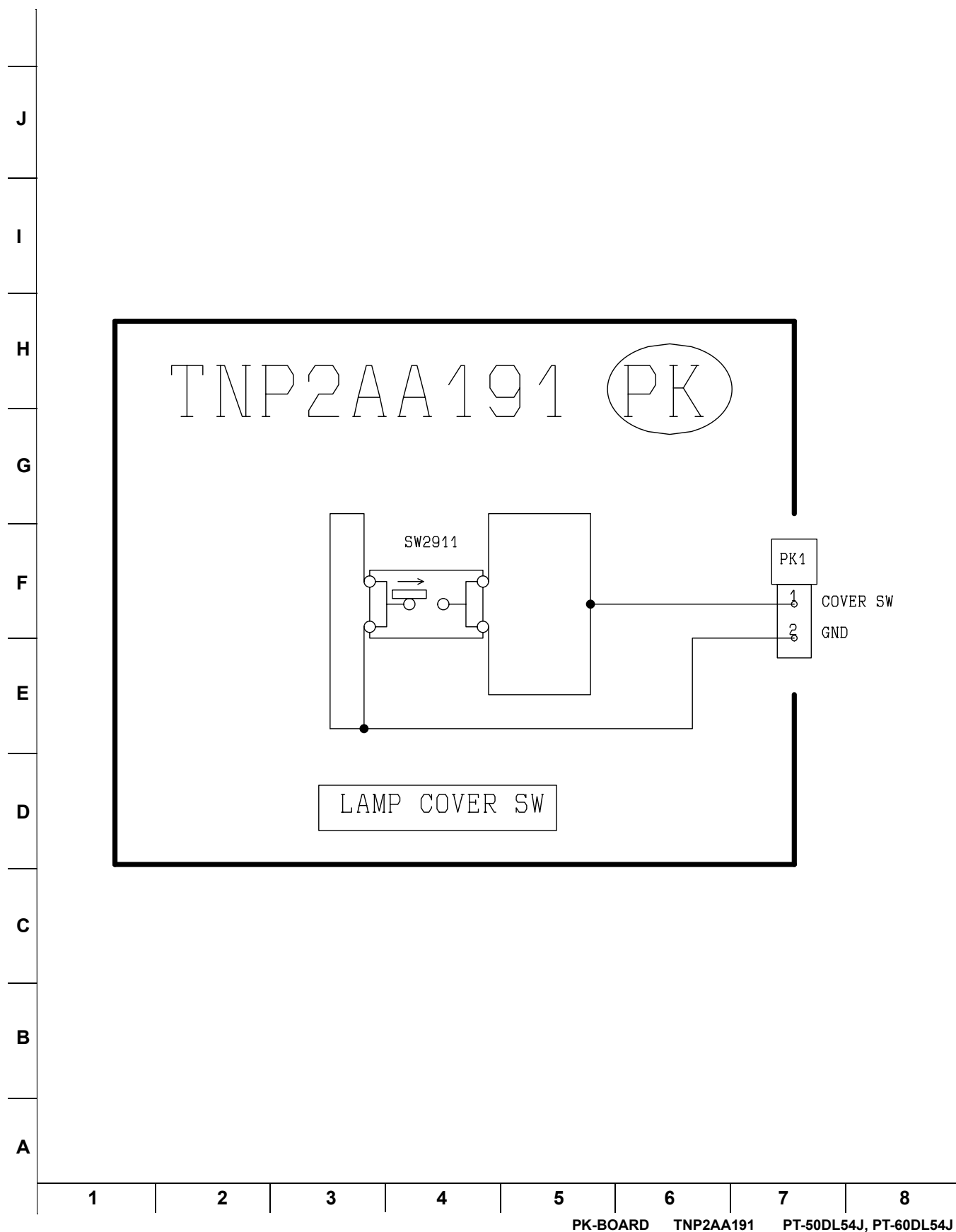


P-BOARD 1/2 TNP2AA181 PT-50DL54J, PT-60DL54J

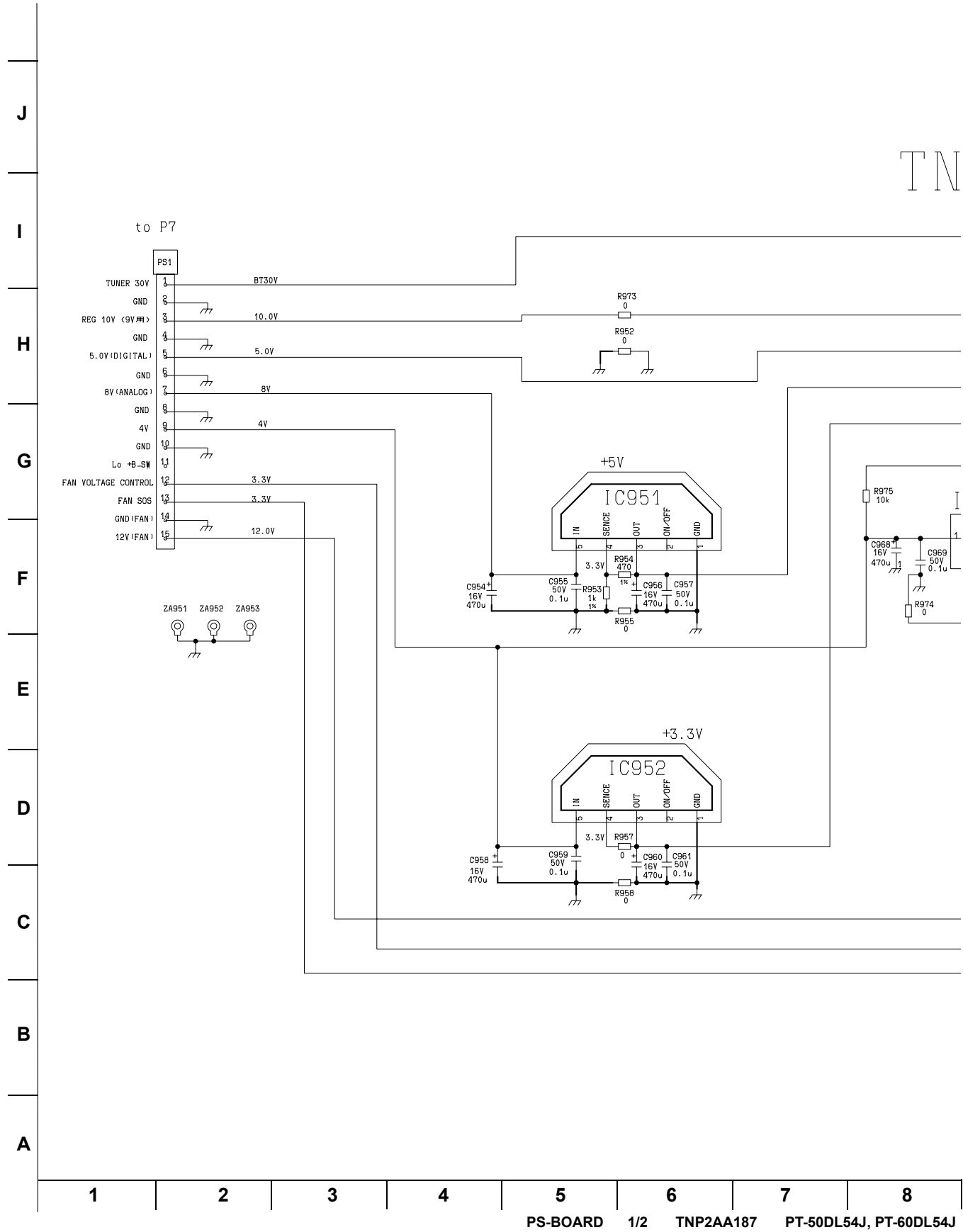
18.15. P-Board schematic 2 of 2



18.16. PK-Board schematic

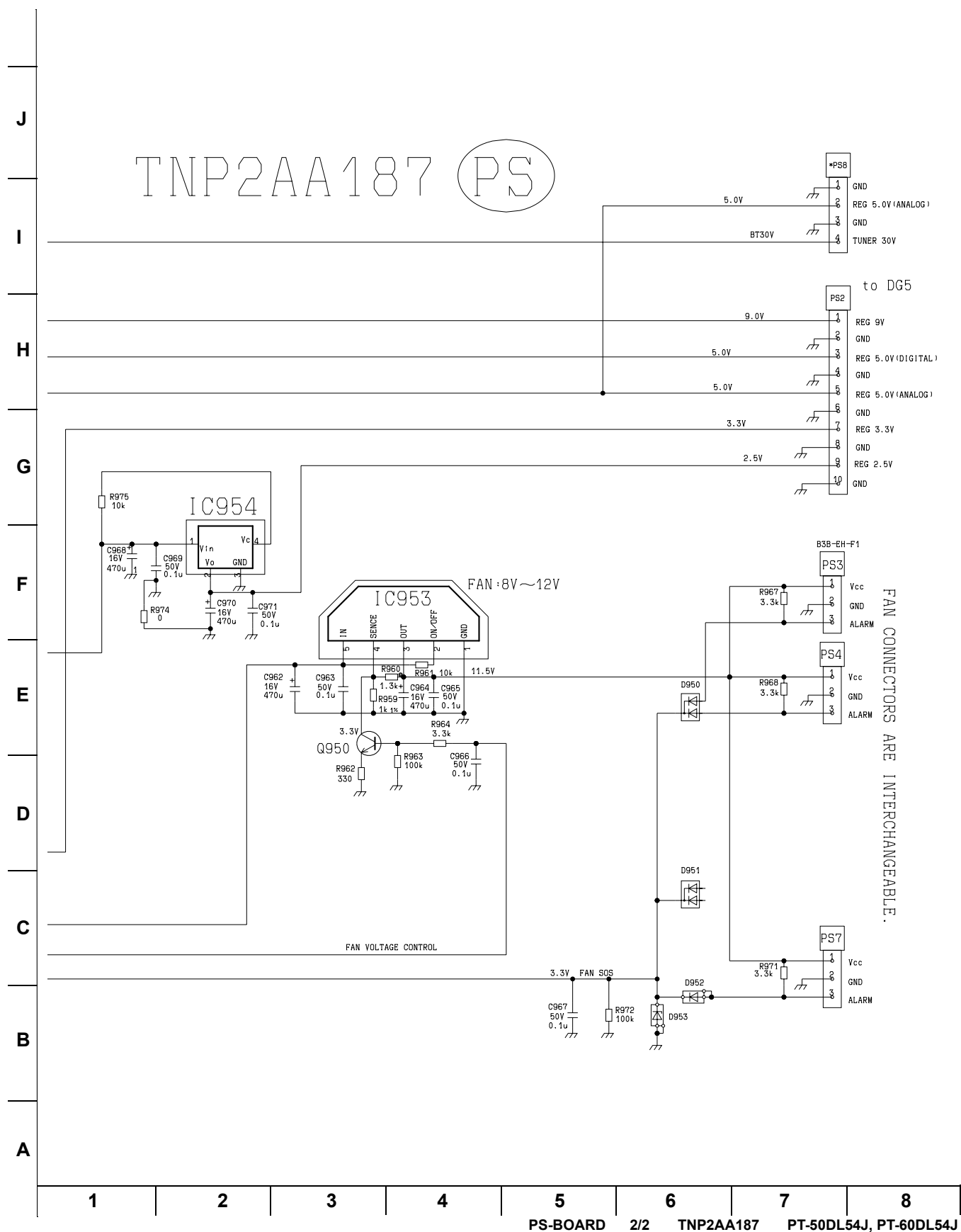


18.17. PS-Board schematic 1 of 2



TN

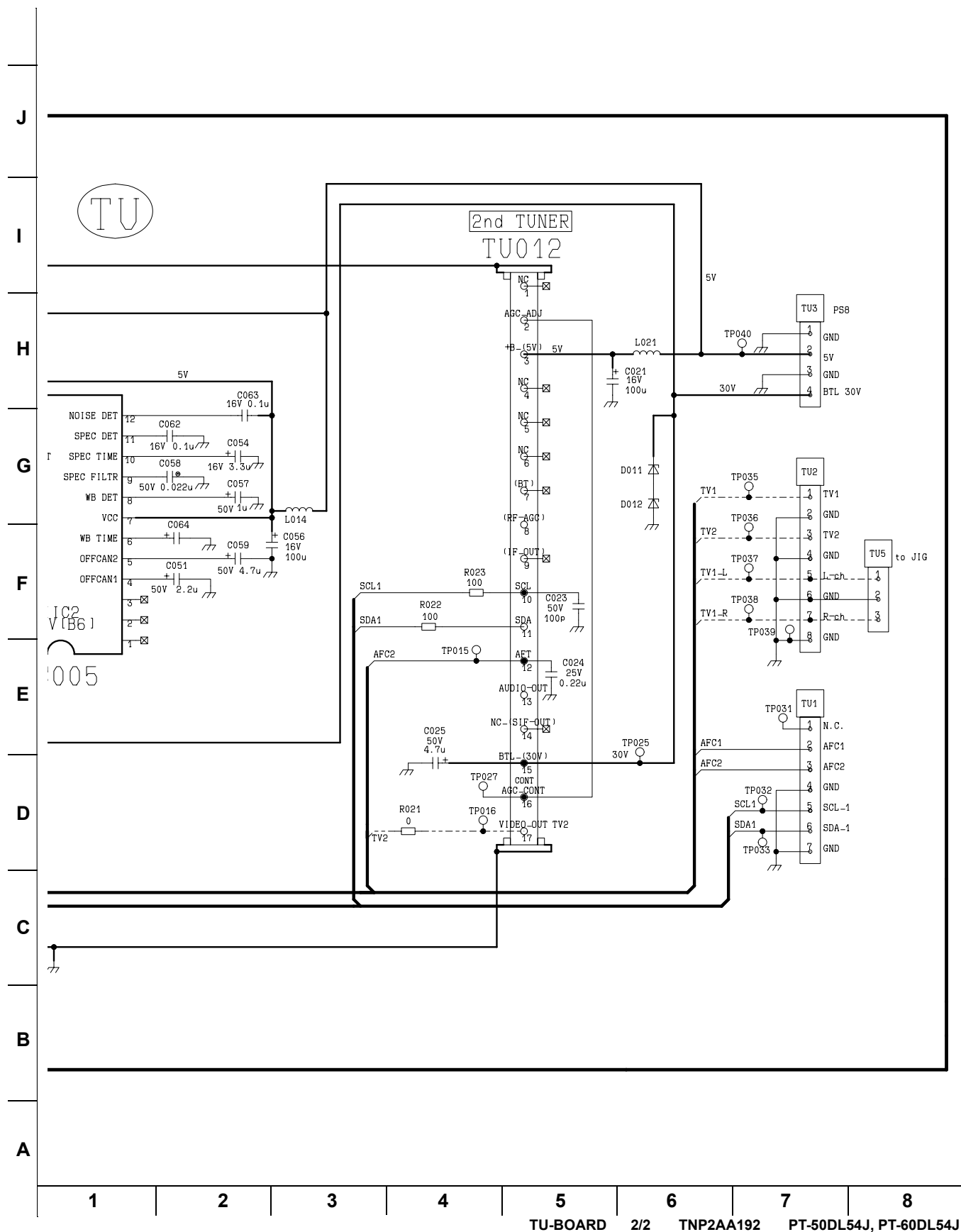
18.18. PS-Board schematic 2 of 2



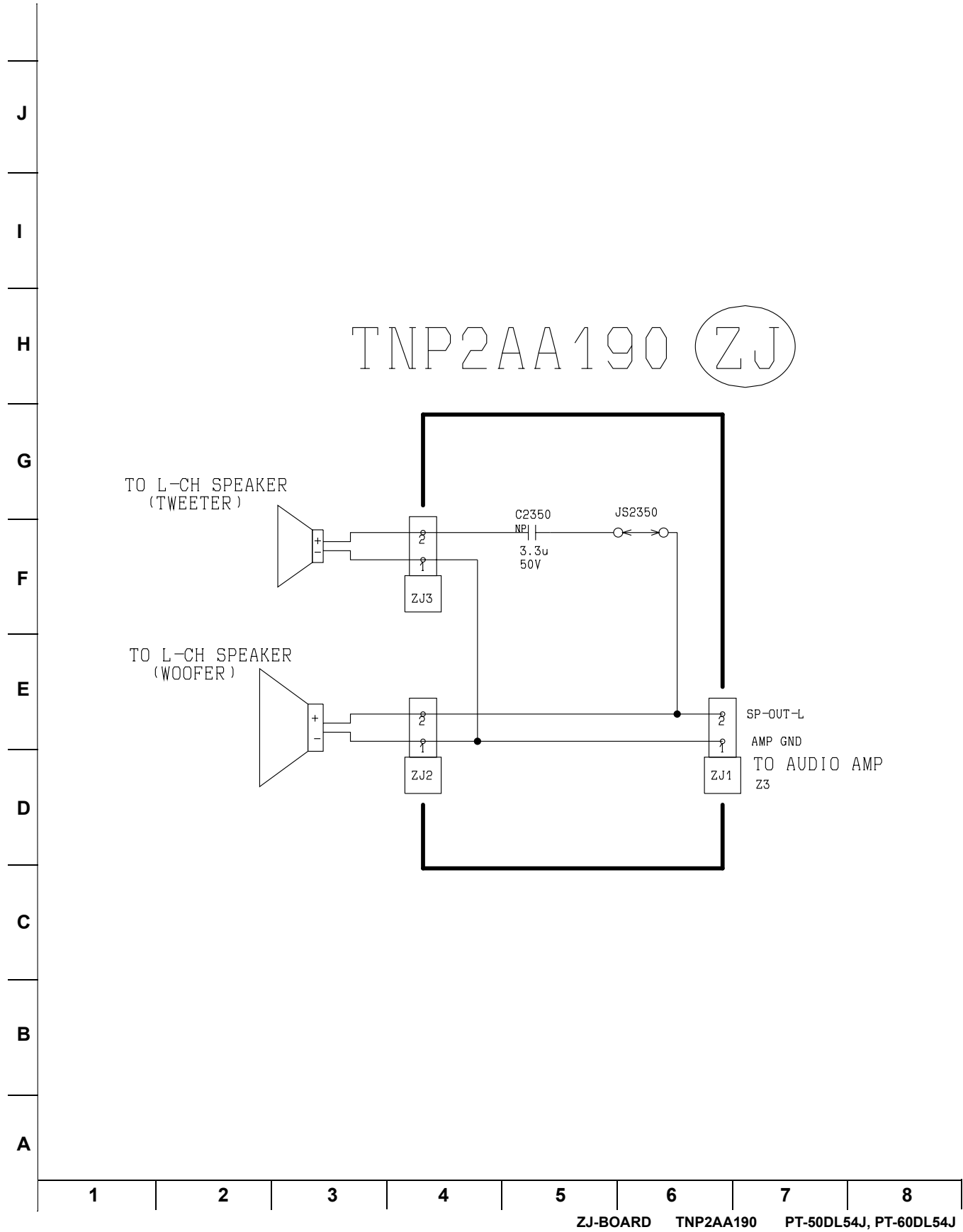
A
B
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J



18.20. TU-Board schematic 2 of 2

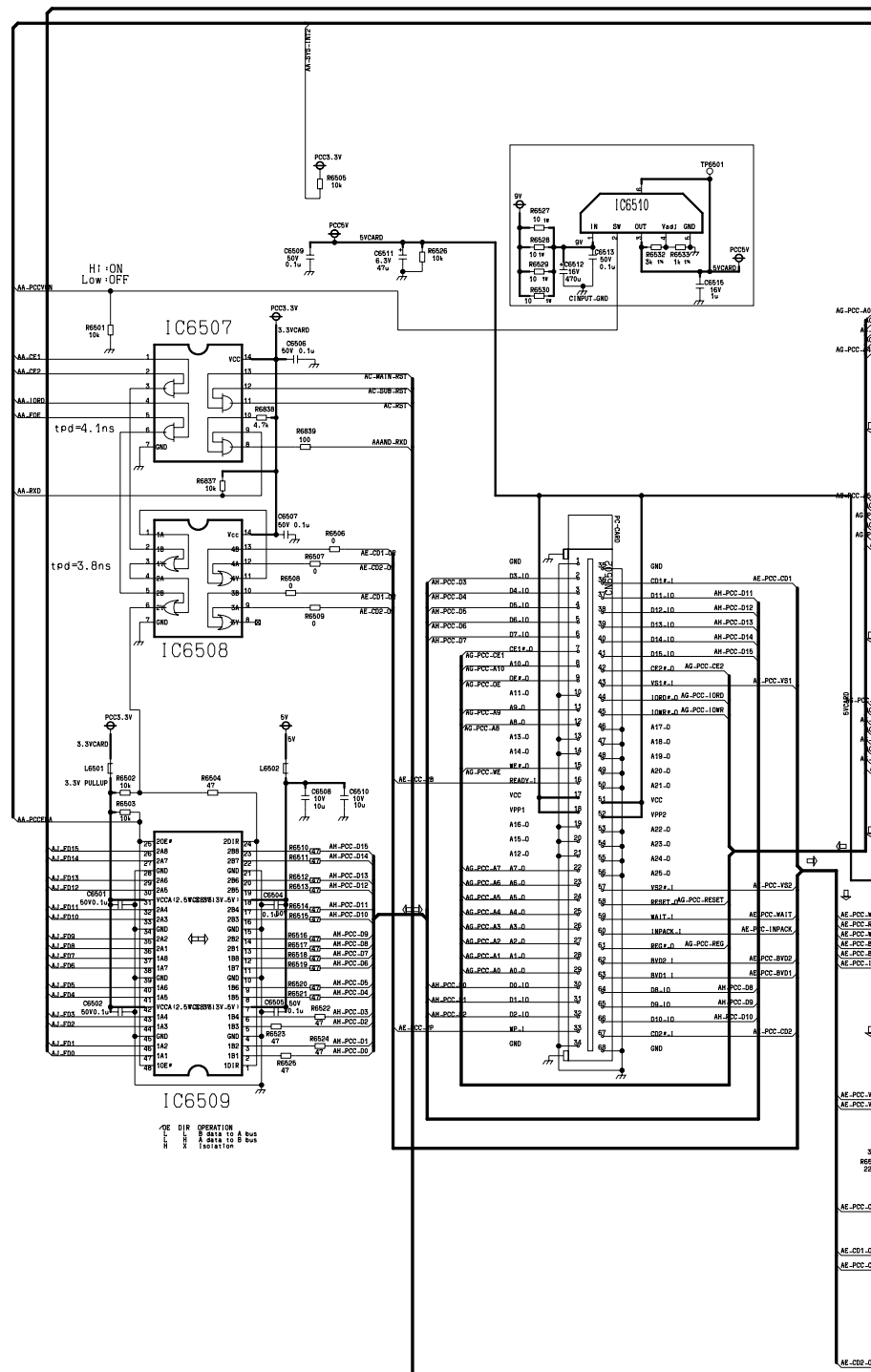
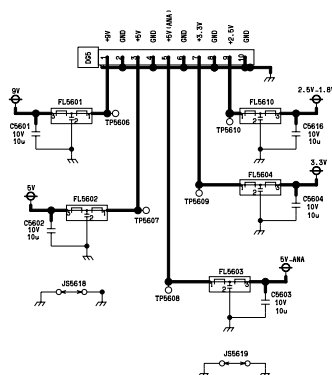


18.21. ZJ-Board schematic



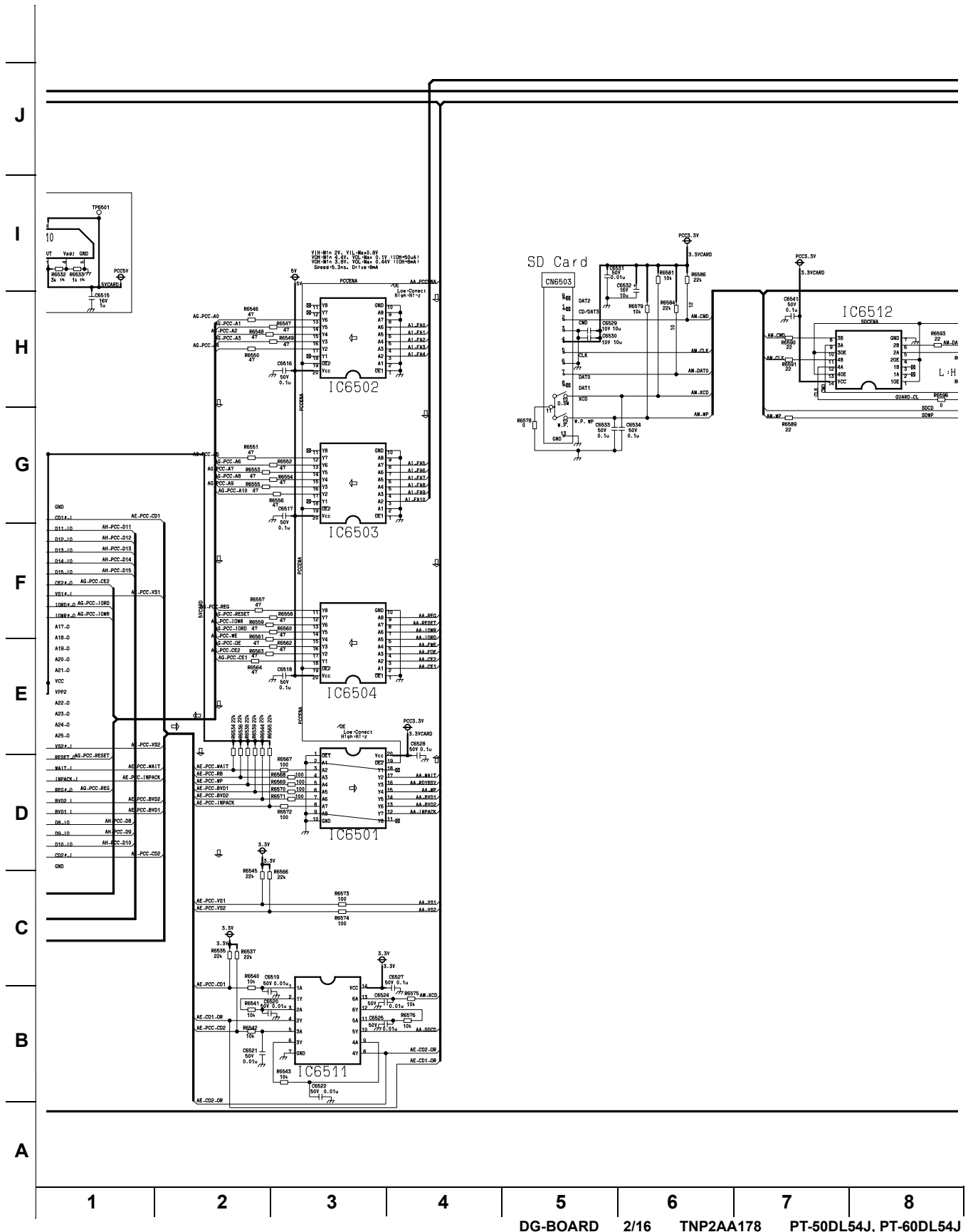
18.22. DG-Board schematic 1 of 19

J
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F
E
D
C
B
A



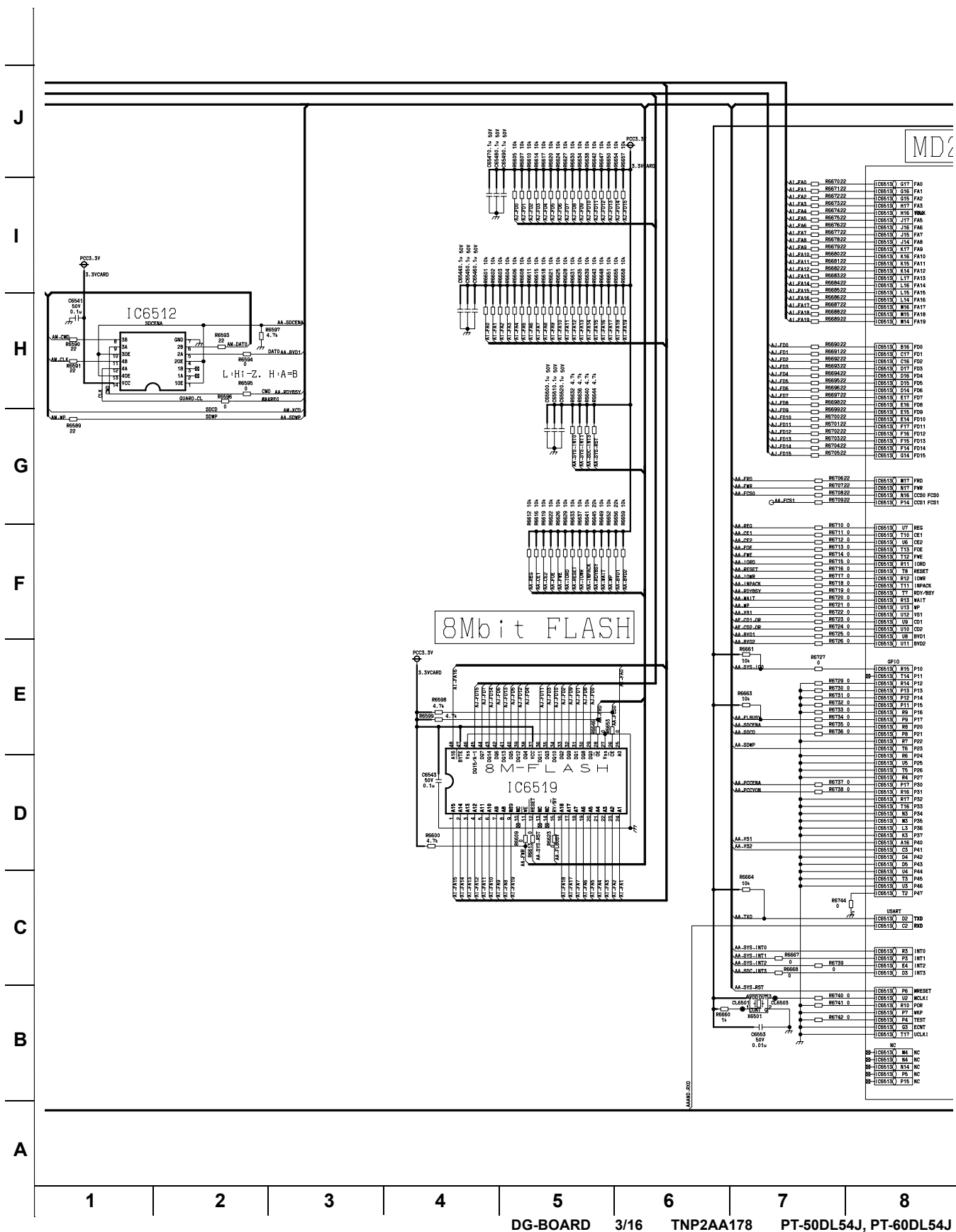
1 2 3 4 5 6 7 8
DG-BOARD 1/16 TNP2AA178 PT-50DL54J, PT-60DL54J

18.23. DG-Board schematic 2 of 19

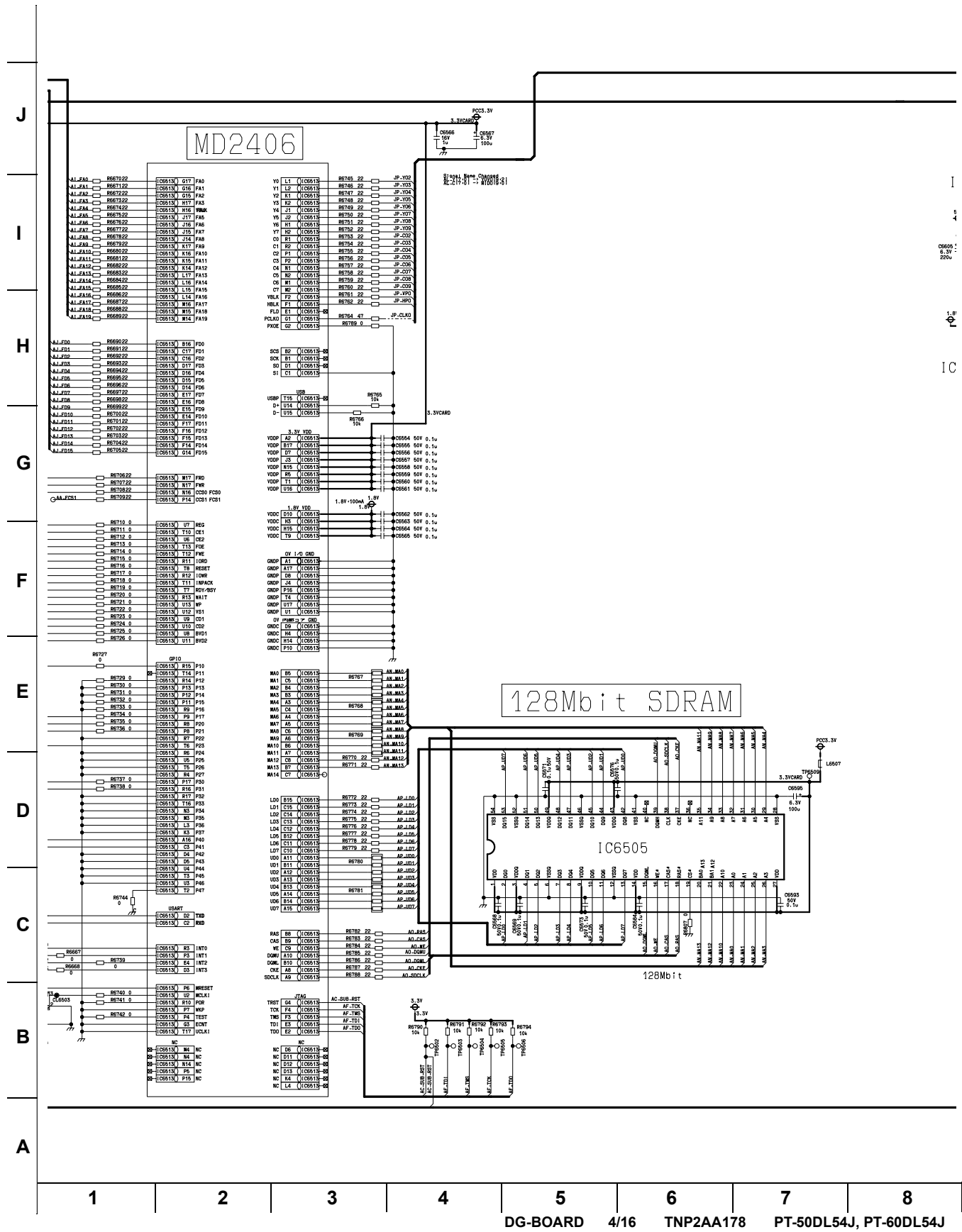


DG-BOARD 2/16 TNP2AA178 PT-50DL54J, PT-60DL54J

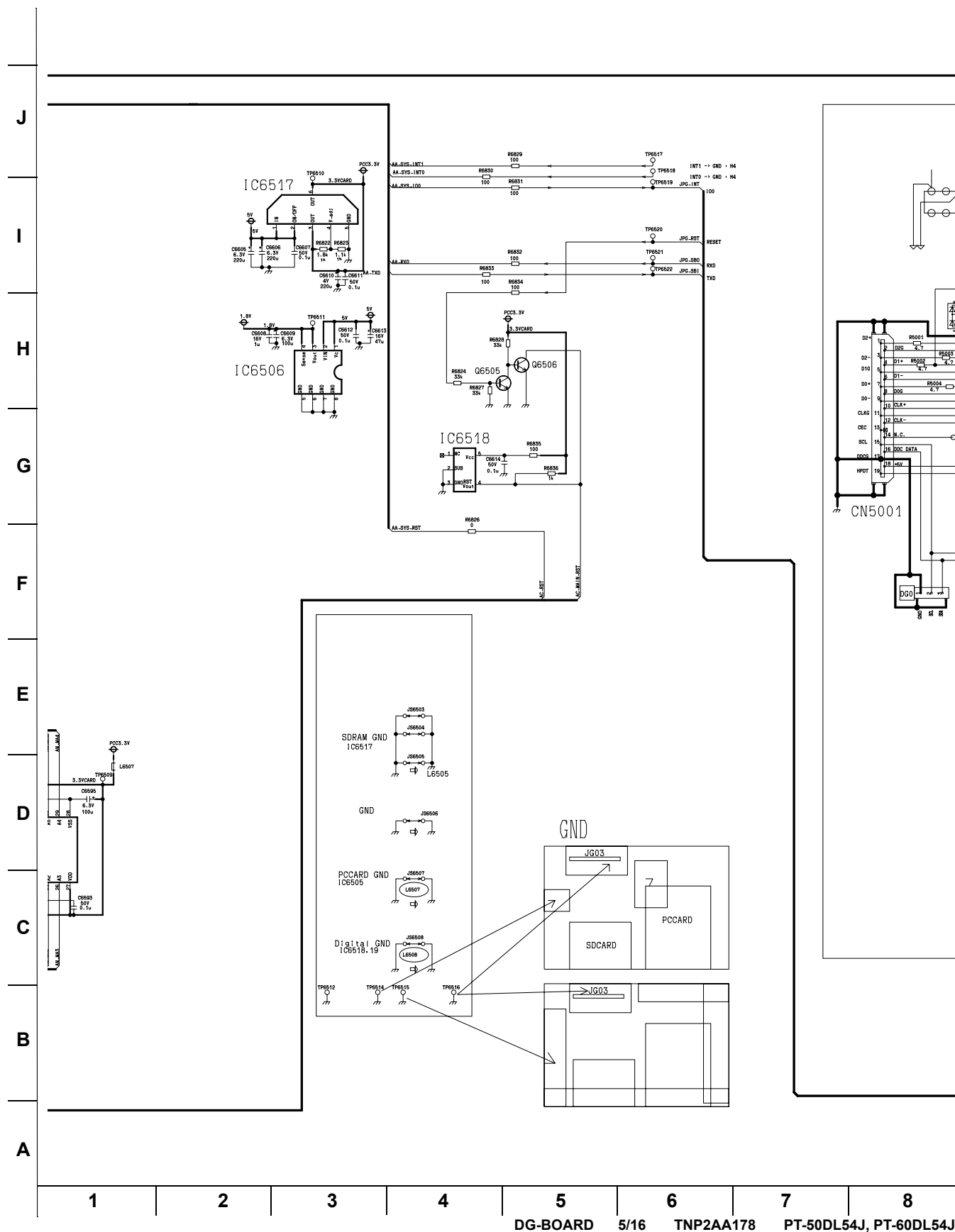
18.24. DG-Board schematic 3 of 19



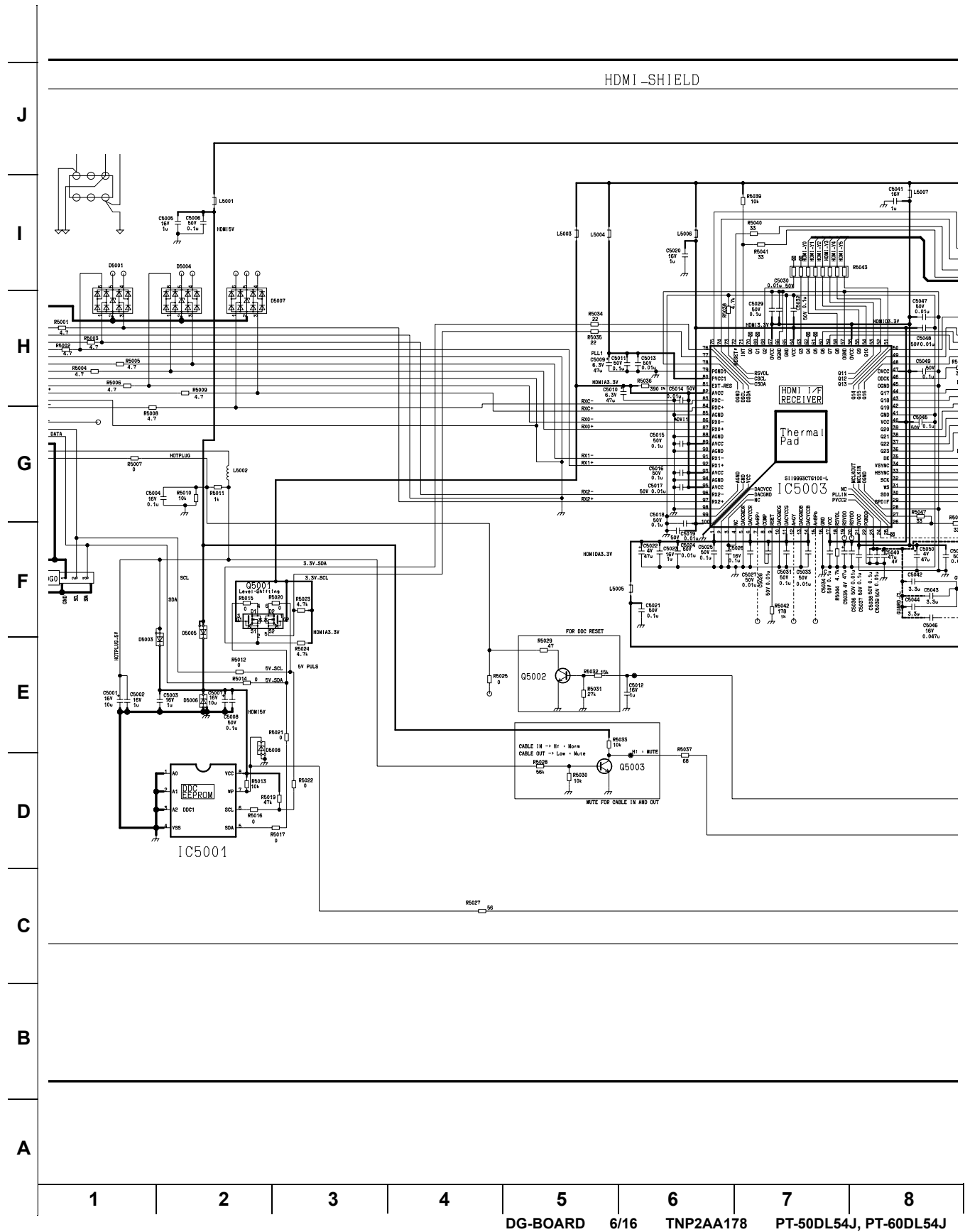
18.25. DG-Board schematic 4 of 19



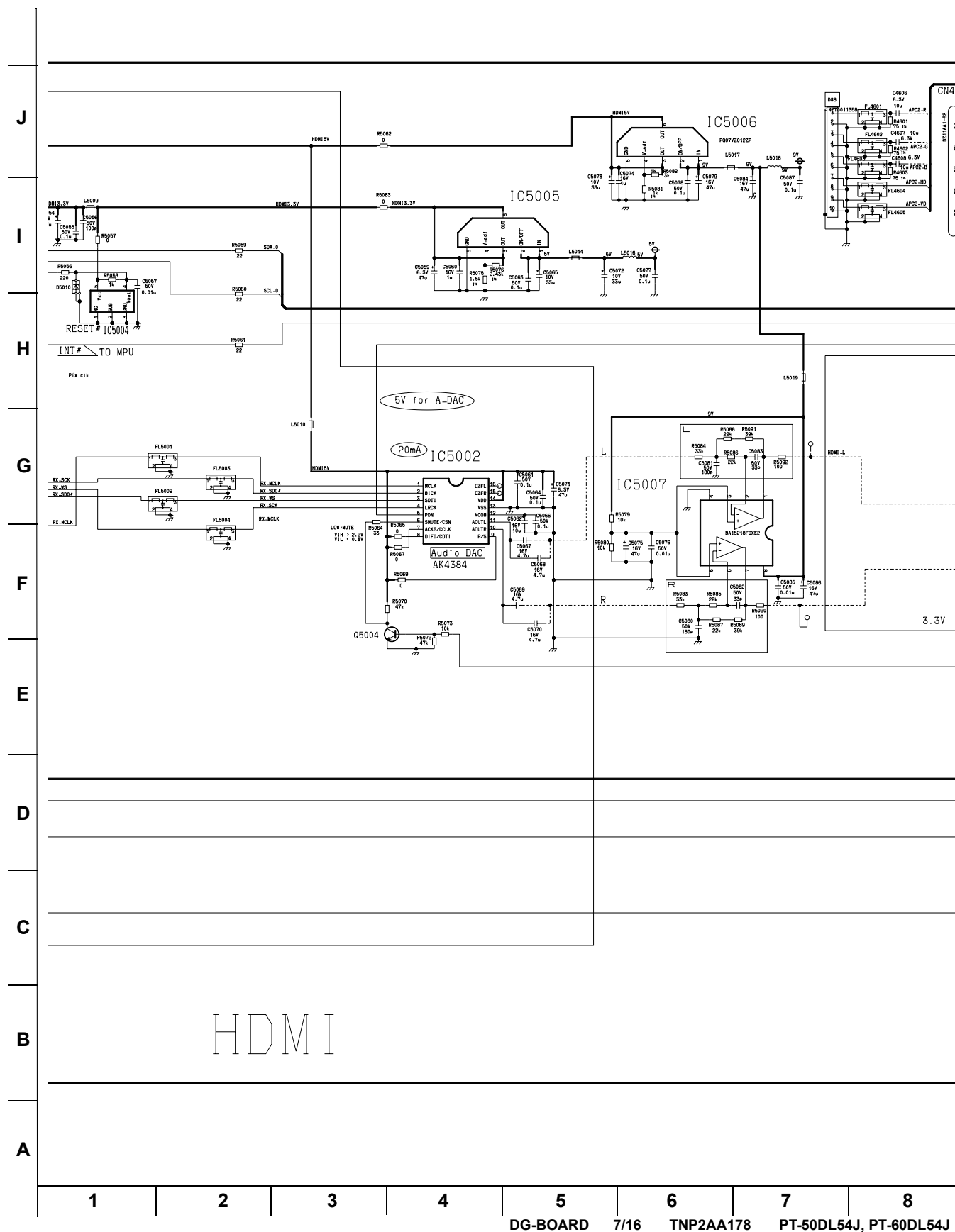
18.26. DG-Board schematic 5 of 19



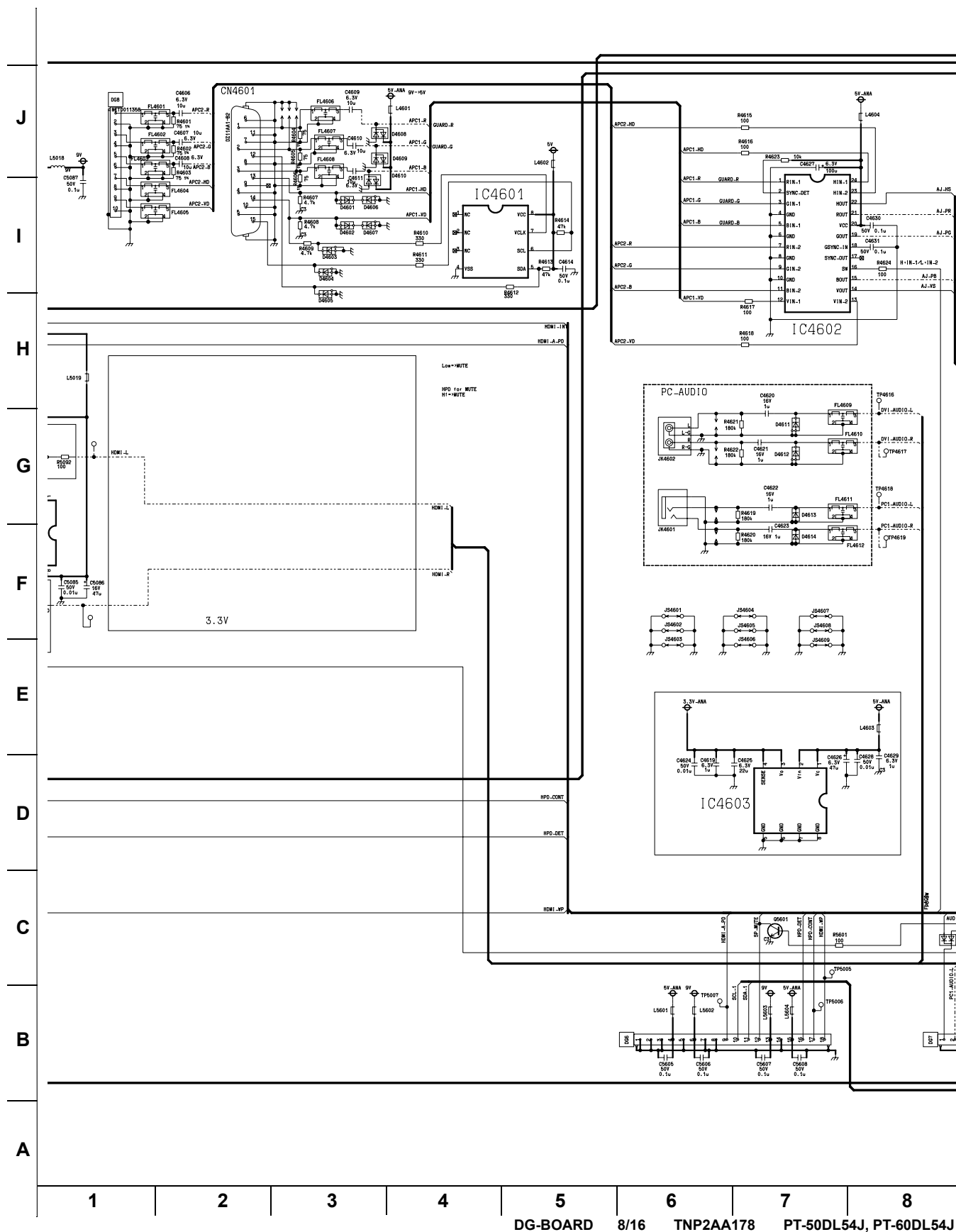
18.27. DG-Board schematic 6 of 19



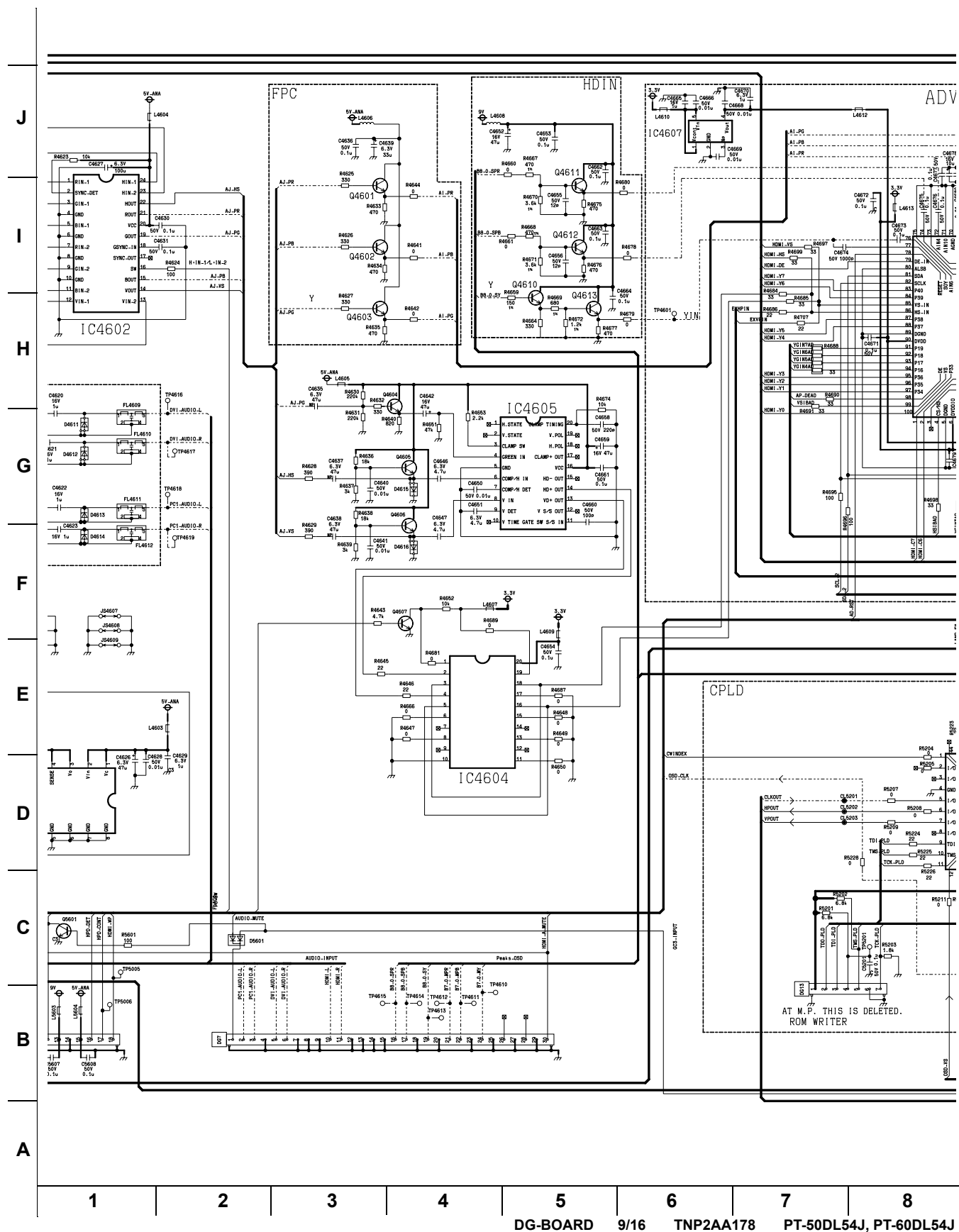
18.28. DG-Board schematic 7 of 19



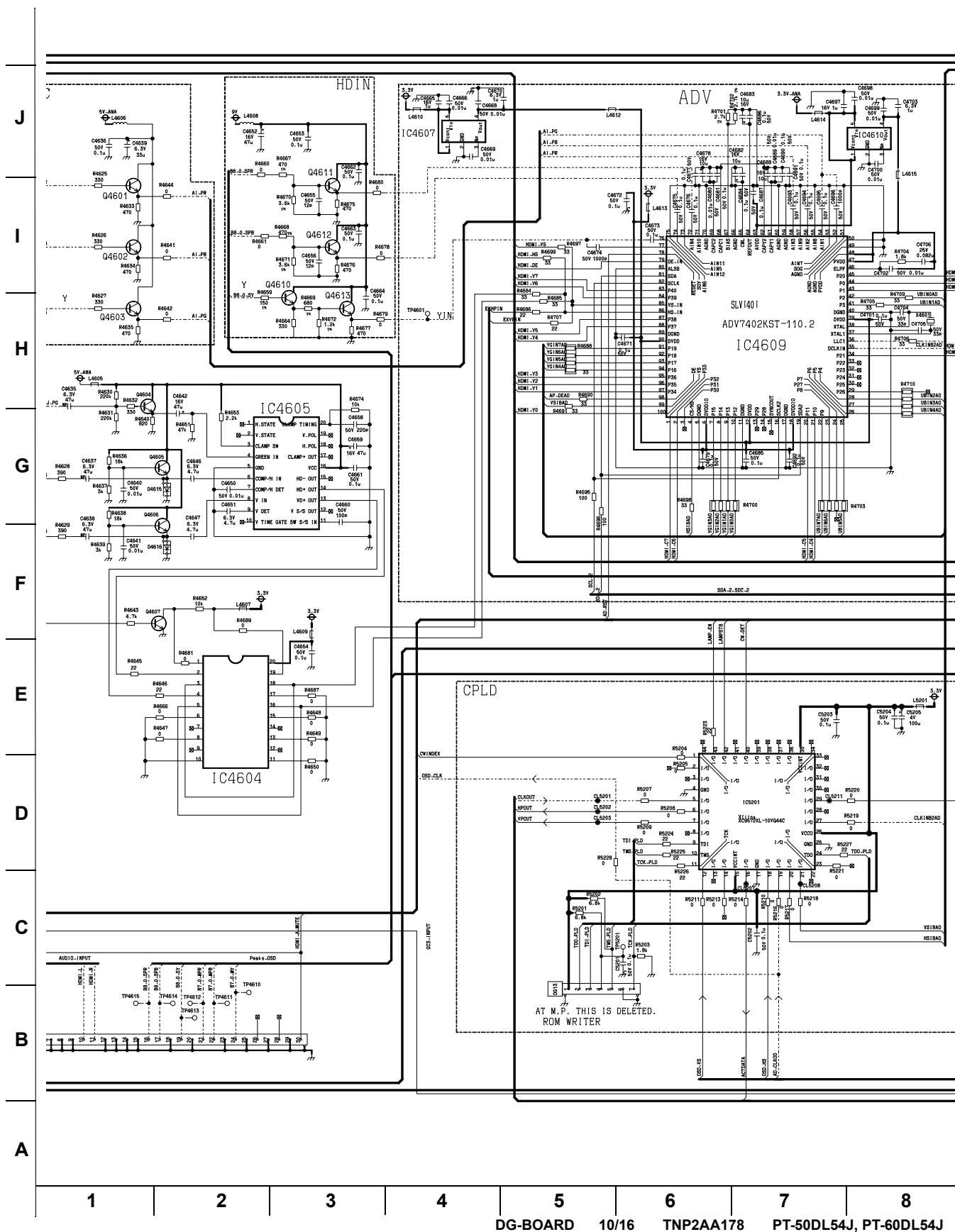
18.29. DG-Board schematic 8 of 19



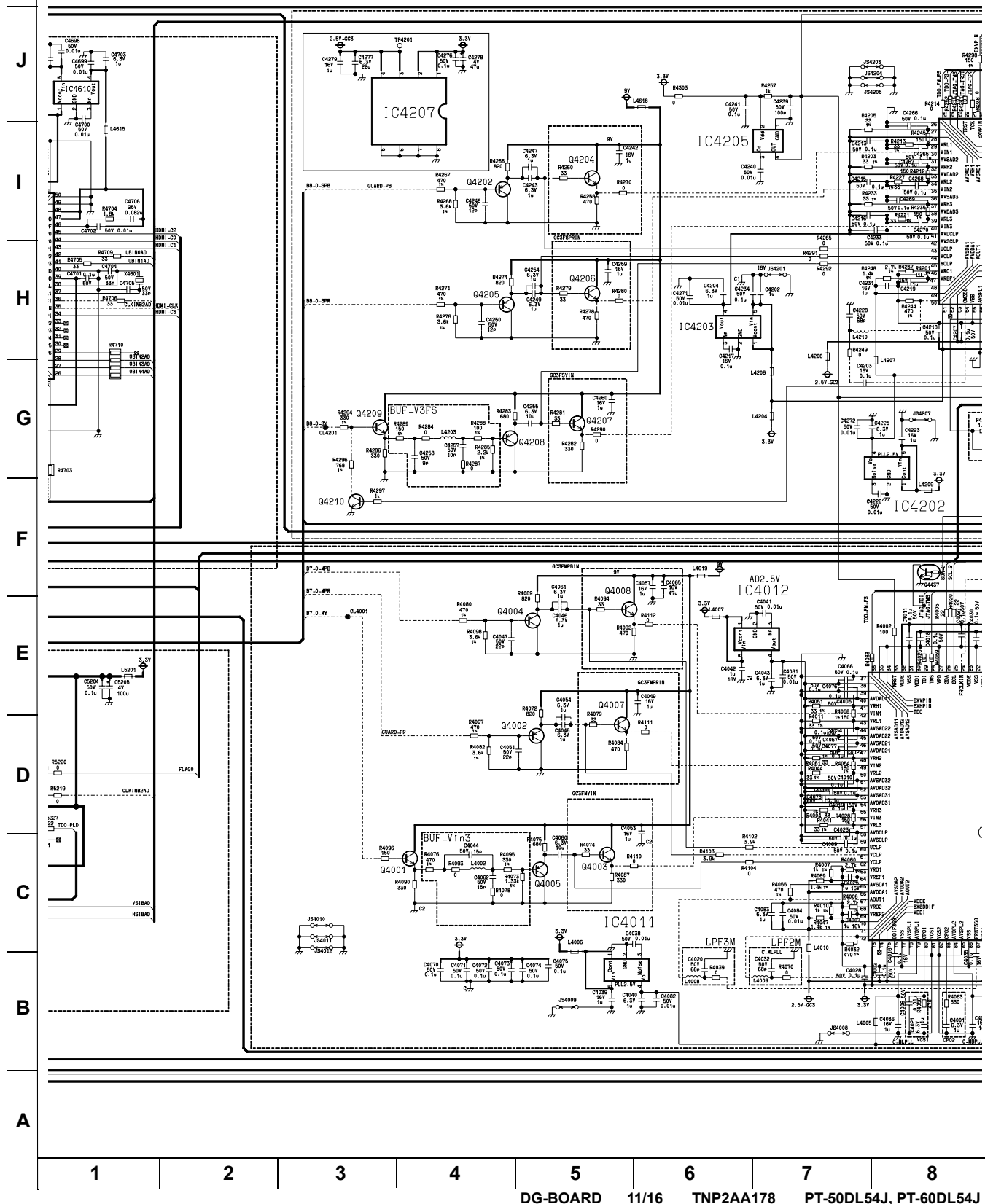
18.30. DG-Board schematic 9 of 19



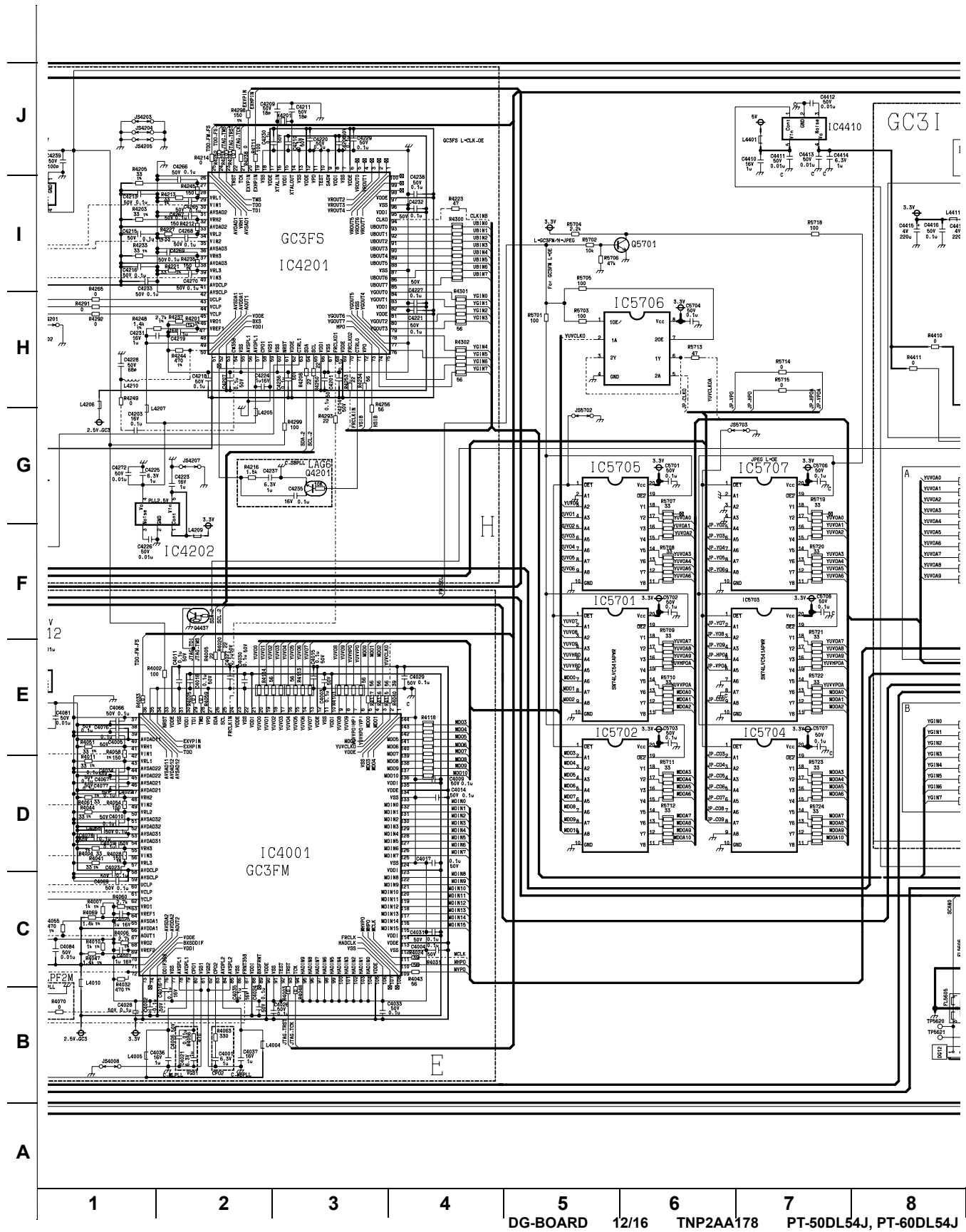
18.31. DG-Board schematic 10 of 19



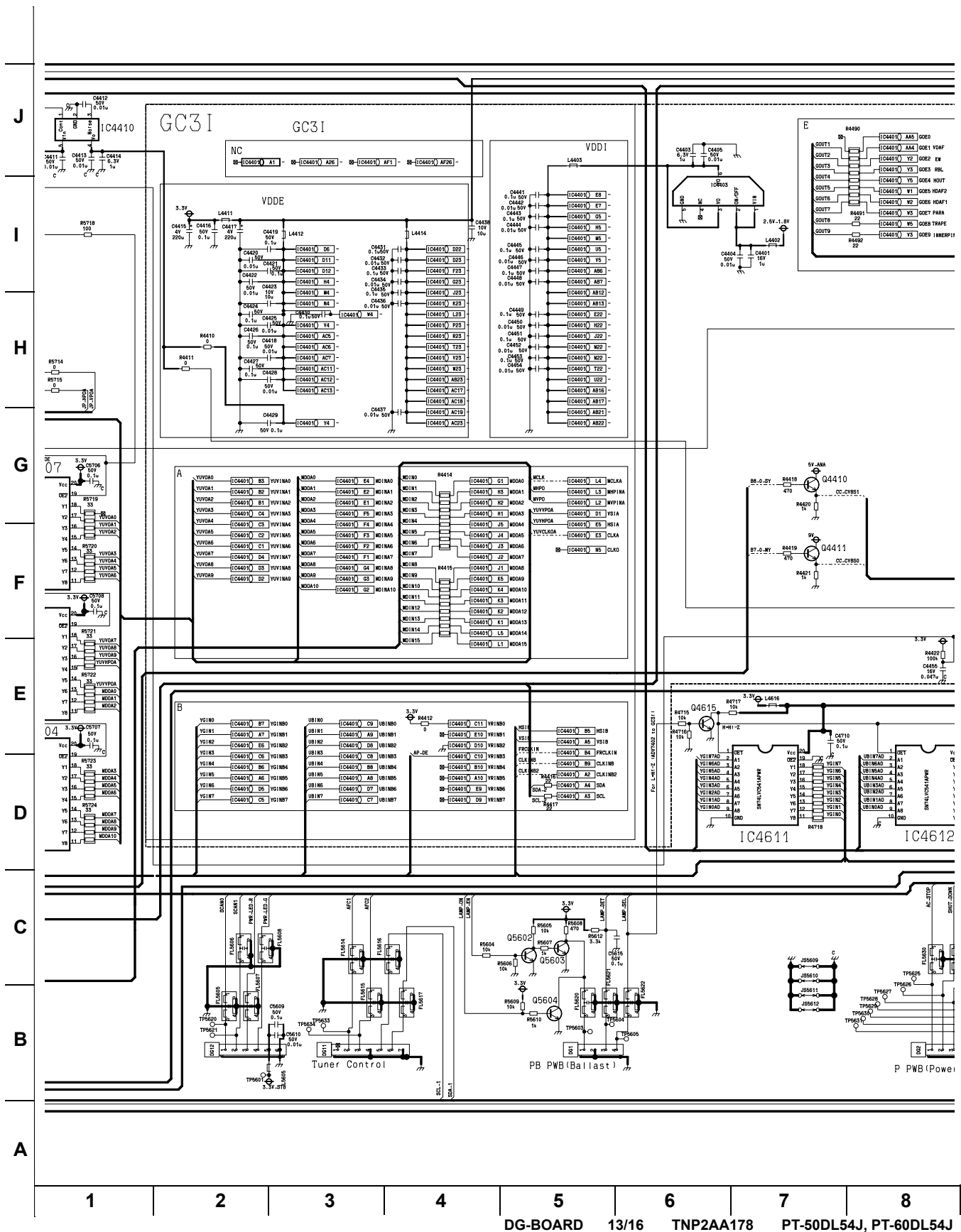
18.32. DG-Board schematic 11 of 19



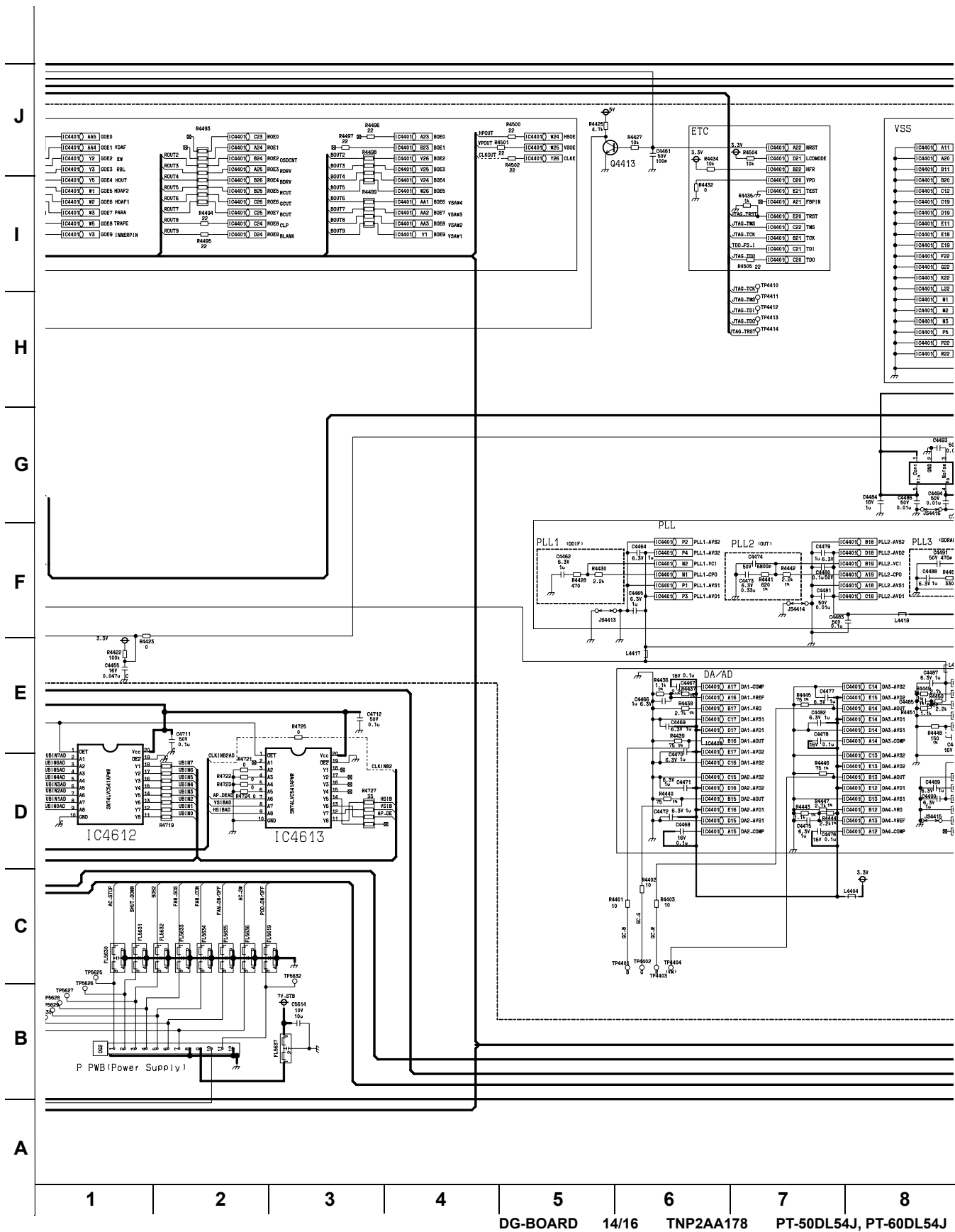
18.33. DG-Board schematic 12 of 19



18.34. DG-Board schematic 13 of 19

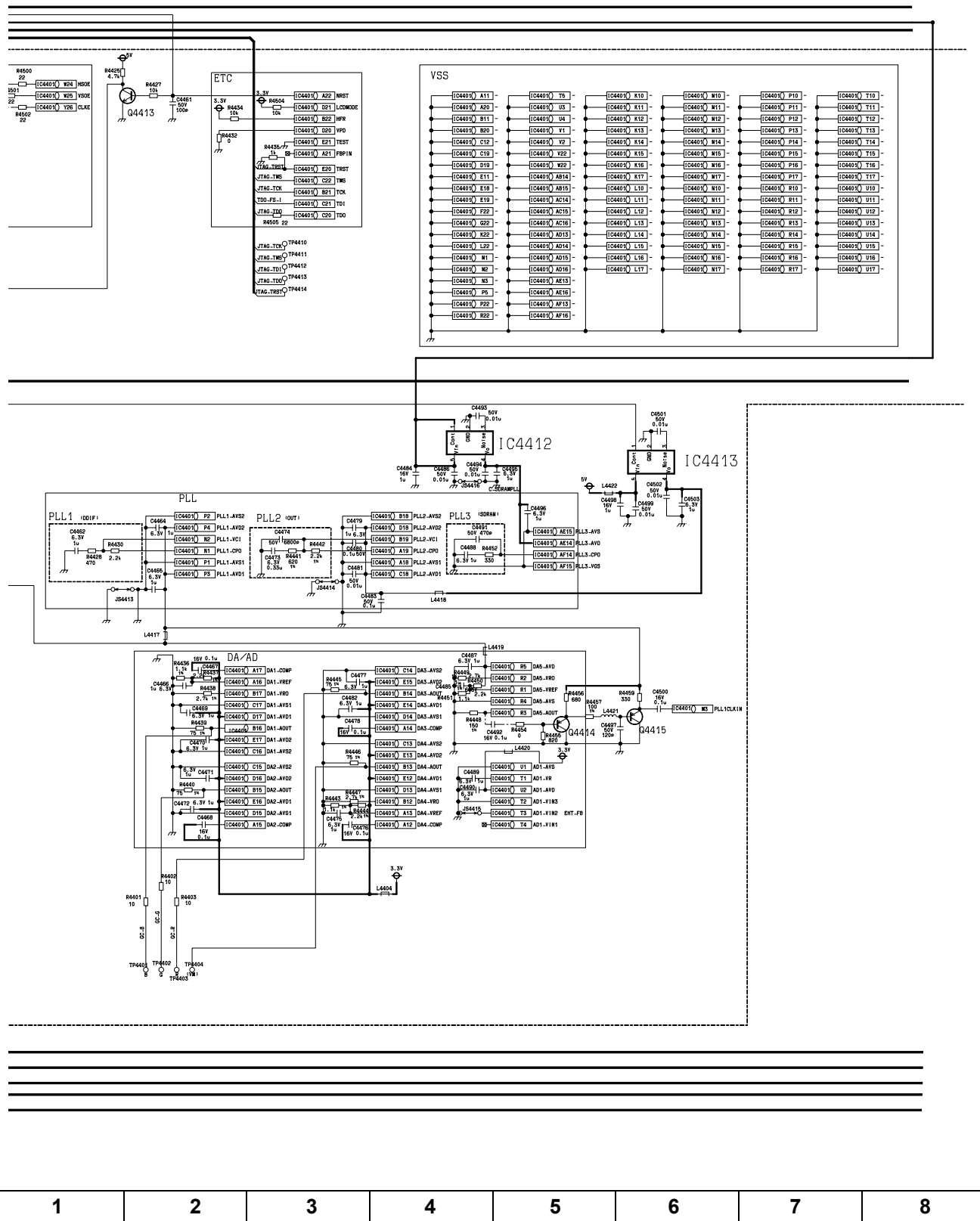


18.35. DG-Board schematic 14 of 19



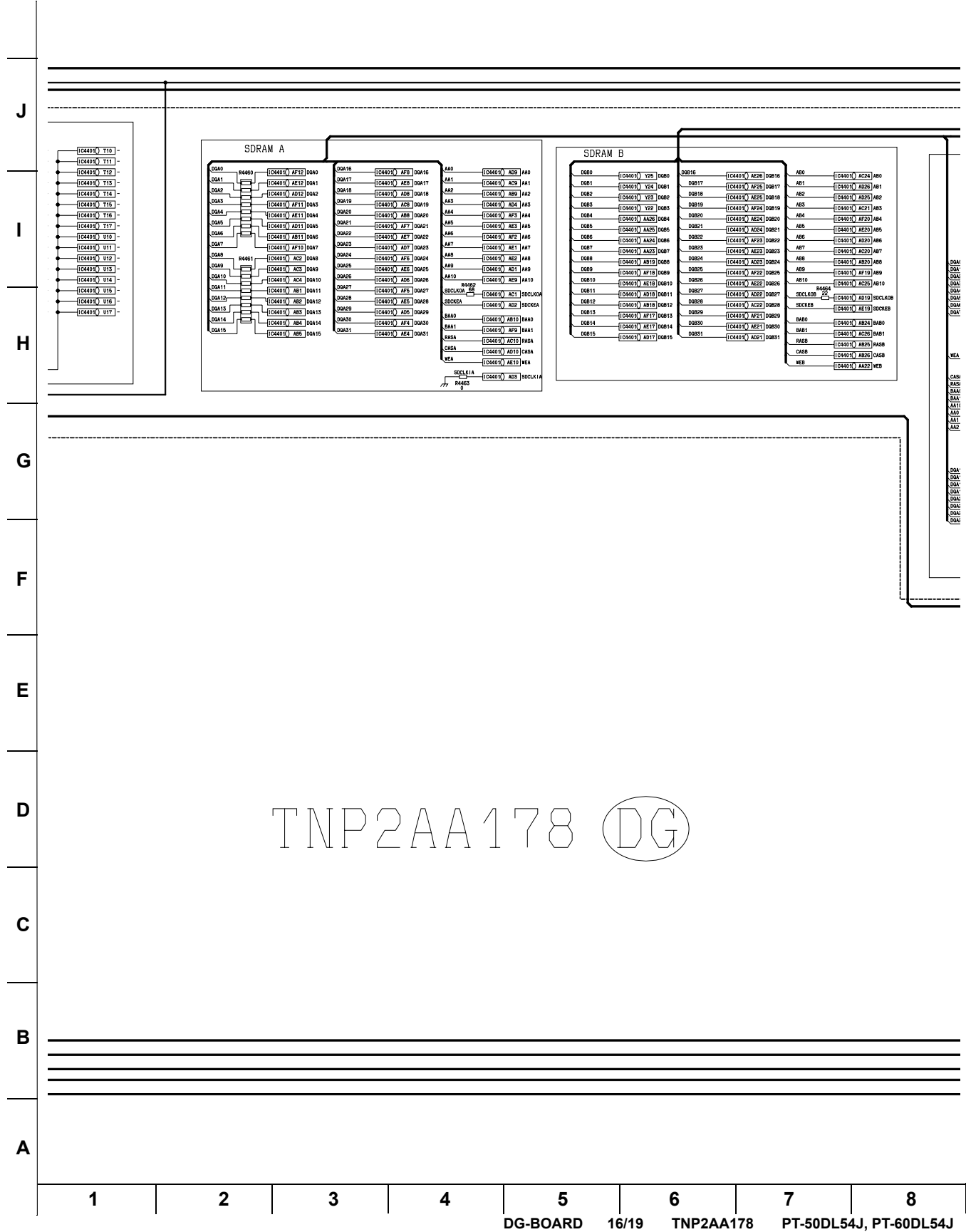
18.36. DG-Board schematic 15 of 19

J
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D
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A

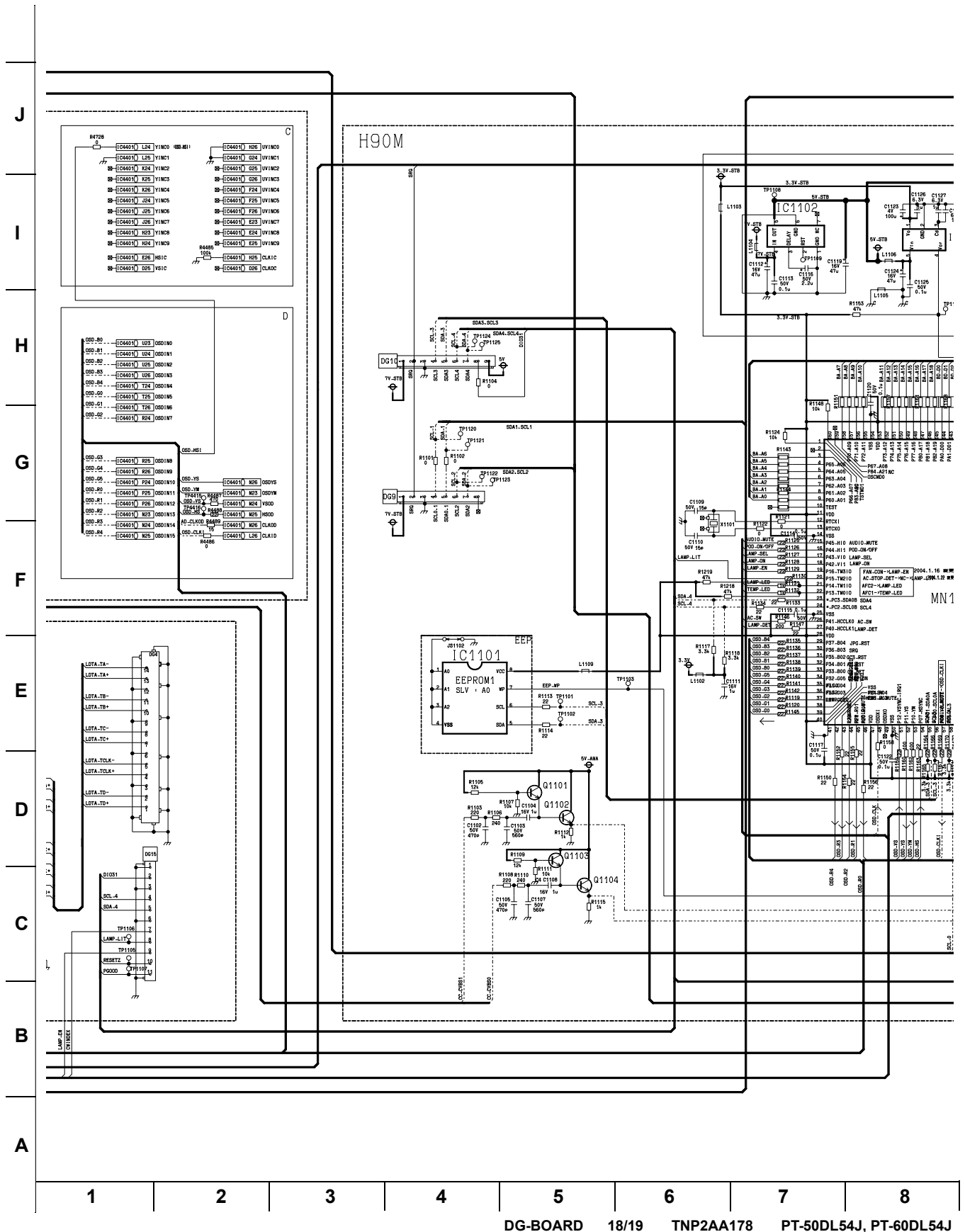


DG-BOARD 15/16 TNP2AA178 PT-50DL54J, PT-60DL54J

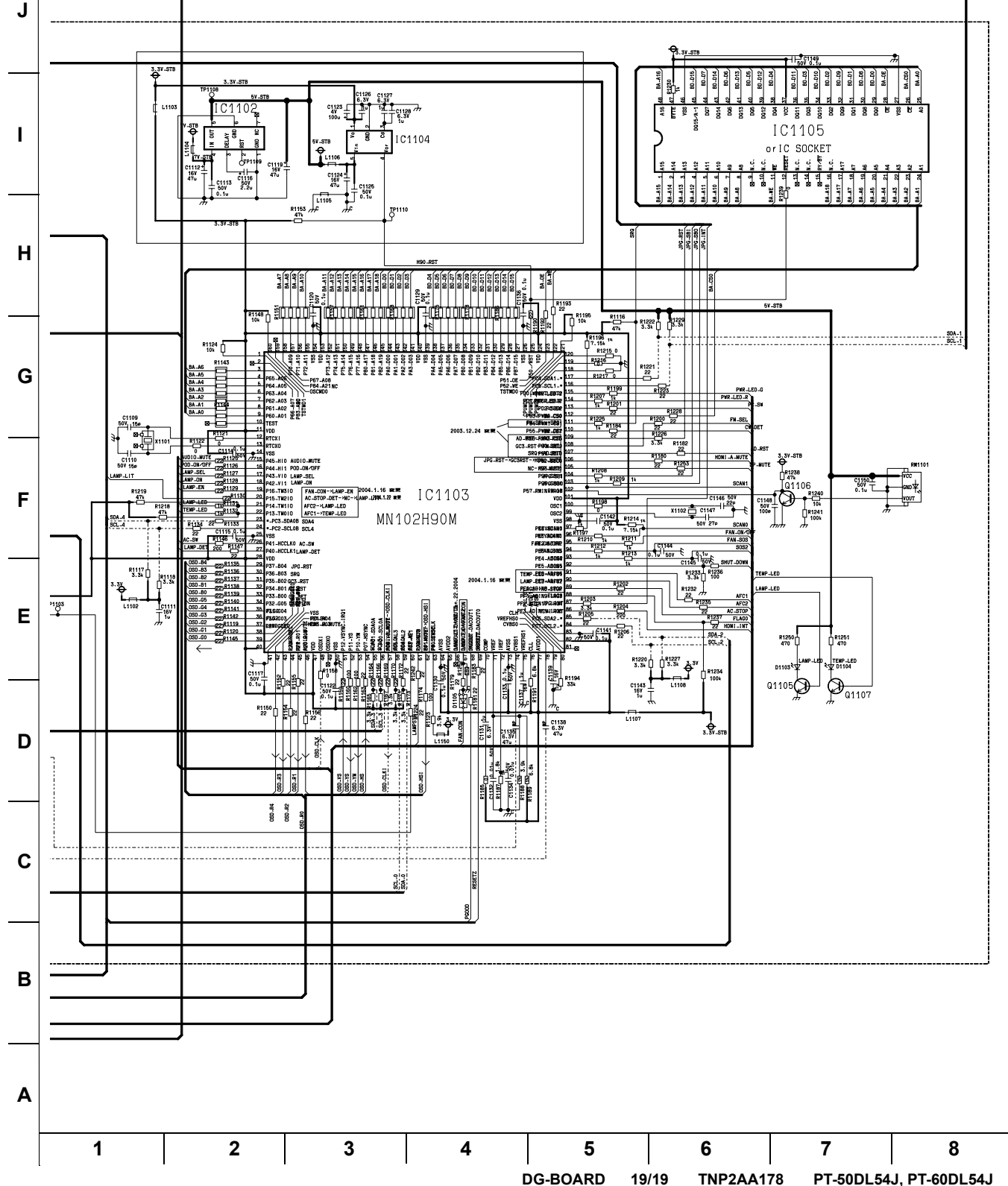
18.37. DG-Board schematic 16 of 19



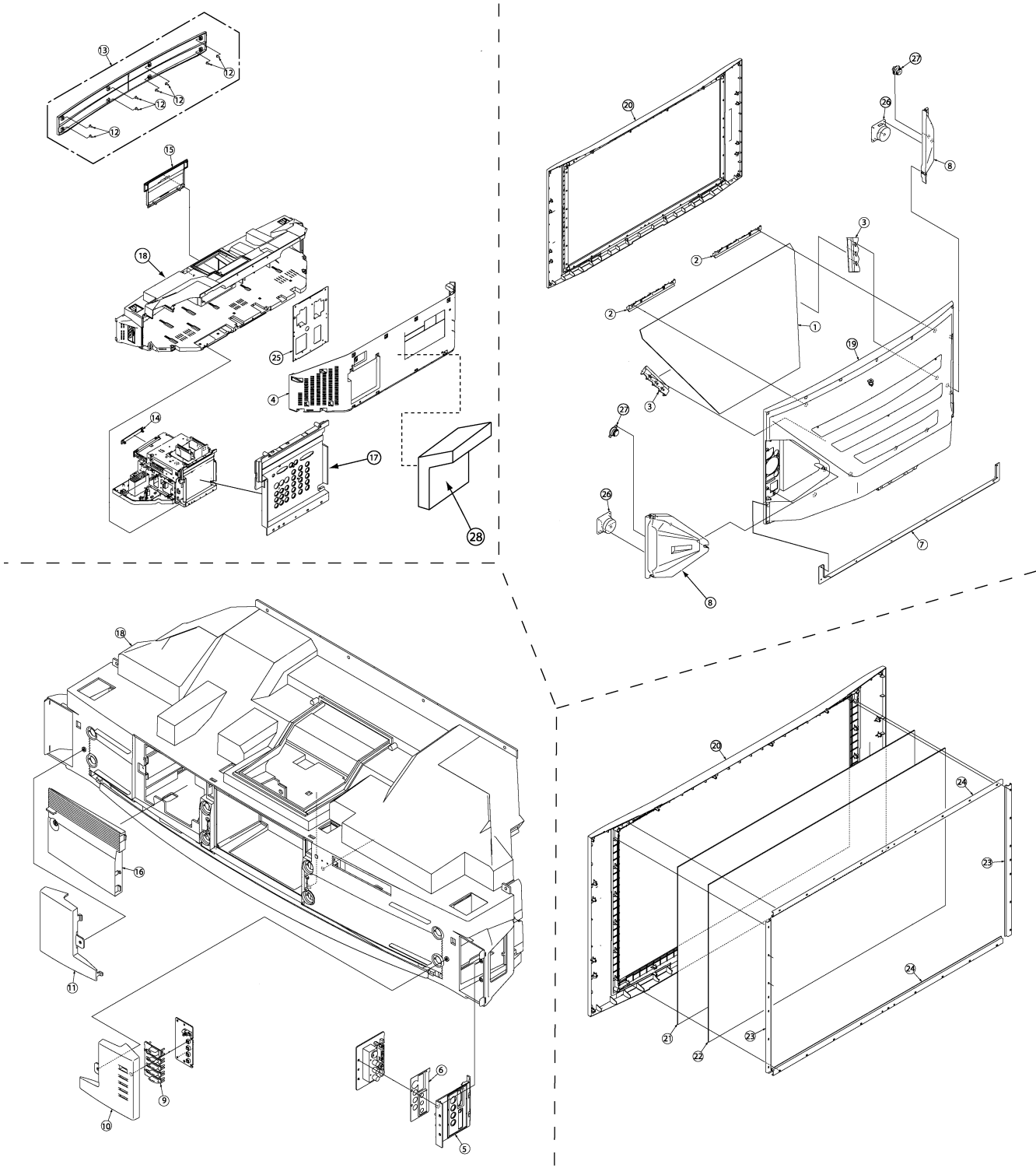
18.39. DG-Board schematic 18 of 19



18.40. DG-Board schematic 19 of 19




19 Parts location



20 Parts list

20.1. Description of abbreviations guide

Important Safety Notice

Components identified by  mark have special characteristics important for safety.
When replacing any of these components, use manufacturer's specified parts.

Abbreviation of part name and description

1. Resistor

Example :

ERD25TJ104 **C** 100K Ω , **J**, 1/4W
Type Allowance

Type	Allowance
C : Carbon	F : $\pm 1\%$
F : Fuse	G : $\pm 2\%$
M : Metal Oxide Metal Film	J : $\pm 5\%$ K : $\pm 10\%$
S : Solid	M : $\pm 20\%$
W : Wire Wound	

2. Capacitor

Example :

ECKF1H103ZF **C** 0.01 μ F, **Z**, 50V
Type Allowance

Type	Allowance
C : Carbon	C : $\pm 0.25\text{pF}$
E : Electrolytic	D : $\pm 0.5\text{pF}$
P : Polyester Polypropylene	F : $\pm 1\text{pF}$ G : $\pm 3\%$
T : Tantalum	J : $\pm 5\%$ K : $\pm 10\%$ L : $\pm 15\%$ M : $\pm 20\%$ P : $\pm 100\%$, -0% Z : $\pm 80\%$, -20%

20.2. Parts list

Ref. No.	Part No.	Part Name & Description	Remarks
CAPACITORS			
C011	ECA1CM101B	CAP,E 100UF-16V	
C013	ECJ2VC1H101J	CAP,C 100PF-J-50V	
C014	ECJ2VF1E224Z	CAP,C .22UF-Z-25V	
C015	ECA1HM4R7B	CAP,E 4.7UF-50V	
C021	ECA1CM101B	CAP,E 100UF-16V	
C023	ECJ2VC1H101J	CAP,C 100PF-J-50V	
C024	ECJ2VF1E224Z	CAP,C .22UF-Z-25V	
C025	ECA1HM4R7B	CAP,E 4.7UF-50V	
C051	ECA1HM2R2B	CAP,E 2.2UF-50V	
C052	ECA1HMR47B	CAP,E .47UF-50V	
C054	ECSF1CE335VB	CAP,E 33MF-16V	
C055	ECA1HM100B	CAP,E 10UF-50V	
C056	ECA1CM101B	CAP,E 100UF-16V	
C057	ECA1HM010B	CAP,E 1UF-50V	
C058	ECQB1H223JF3	CAP,P .022UF-J-50V	
C059	ECA1HM4R7B	CAP,E 4.7UF-50V	
C060	ECQB1H473JF3	CAP,P .047UF-J-50V	
C061	ECJ2VB1C104K	CAP,C .1UF-K-16V	
C062	ECJ2VB1C104K	CAP,C .1UF-K-16V	
C063	ECJ2VB1C104K	CAP,C .1UF-K-16V	
C064	ECSF1CE106VB	CAP,E 10UF-16V	
C800	ECKCNA102MB7	CAP,C .001UF-M-125V	△
C801	ECQU2A105MLA	CAP,P 1-M-100V	△
C802	ECQU2A105MLA	CAP,P 1-M-100V	△
C803	ECQU2A105MLA	CAP,P 1-M-100V	△
C804	ECQU2A105MLA	CAP,P 1-M-100V	△
C805	ECKCNA222ME7	CAP,C 2200PF-M-125V	△
C806	ECKCNA222ME7	CAP,C 2200PF-M-125V	△
C813	EETED2D102C	CAP,E 1000PF-200V	△
C814	ECQE6105JFB	CAP,P 1-J-630V	△
C815	ECQE2333JFB	CAP,P .033UF-J-200V	
C816	ECKW3D152KBP	CAP,C 1500PF-K-2KV	
C817	ECJ2VF1H104Z	CAP,C .1UF-Z-50V	
C818	EEUFC1V151B	CAP,E 150UF-35V	
C819	ECJ2VB1H272K	CAP,C .0027UF-K-50V	
C820	ECJ2VF1H333Z	CAP,C .033UF-Z-50V	
C821	ECQB1H102JF3	CAP,P 1000PF-J-50V	
C822	ECQB1H102JF3	CAP,P 1000PF-J-50V	
C823	ECEA1HKA4R7B	CAP,E 4.7UF-50V	
C824	ECJ2VC1H221J	CAP,C 220PF-J-50V	
C825	ECJ2VF1H224Z	CAP,C .22UF-Z-50V	
C826	ECJ2VF1H104Z	CAP,C .1UF-Z-50V	
C827	ECKW3D471KBP	CAP,C 470PF-K-2KVDC	
C828	ECKW3D101KBP	CAP,C 100PF-K-2KV	
C830	ECJ2YF1E474Z	CAP,C .47UF-Z-25V	
C831	ECA1VHG101B	CAP,E 100UF-35V	
C831	ECA1VHG221B	CAP,E 220UF-35V	
C832	ECJ2VF1C105Z	CAP,C 1.0UF-Z-16V	
C833	ECJ2VC1H152J	CAP,C .0015UF-J-50V	
C834	ECJ2VC1H152J	CAP,C .0015UF-J-50V	
C835	ECJ2VC1H101J	CAP,C 100PF-J-50V	
C836	ECJ2VC1H101J	CAP,C 100PF-J-50V	
C837	EETHC2G181H	CAP,E 180UF-400V	
C838	ECQE6473KFB	CAP,P .047-K-6	
C841	EEUFC1E222E	CAP,E 2200UF-25V	
C842	ECJ2VB1H102K	CAP,C .001UF-K-50V	
C843	ECJ2VB1H102K	CAP,C .001UF-K-50V	
C844	EEUFC1E222E	CAP,E 2200UF-25V	
C845	ECJ2VB1H102K	CAP,C .001UF-K-50V	
C846	ECJ2VB1H102K	CAP,C .001UF-K-50V	
C847	EEUFC1C332E	CAP,E 3300UF-16V	
C848	ECJ2VF1H104Z	CAP,C .1UF-Z-50V	
C849	ECJ2VB1H102K	CAP,C .001UF-K-50V	
C850	ECJ2VB1H102K	CAP,C .001UF-K-50V	
C851	ECJ2VF1H104Z	CAP,C .1UF-Z-50V	
C852	EEUFC1C332E	CAP,E 3300UF-16V	
C853	ECJ2VB1H102K	CAP,C .001UF-K-50V	
C854	ECJ2VB1H102K	CAP,C .001UF-K-50V	
C855	ECJ2VF1H104Z	CAP,C .1UF-Z-50V	
C856	EEUFC1V222SE	CAP,E 2200UF-35V	

Ref. No.	Part No.	Part Name & Description	Remarks
C857	ECKR3A471KBP	CAP,C 470PF-K-1KV	
C858	ECA1VHG101B	CAP,E 100UF-35V	
C859	ECJ2VF1H333Z	CAP,C .033UF-Z-50V	
C860	ECJ2VF1H104Z	CAP,C .1UF-Z-50V	
C861	ECA1EM471B	CAP,E .47UF-25V	
C862	ECQV1H334JL3	CAP,P .33UF-J-50V	
C864	ECA1AHG471B	CAP,E 470-10V	
C865	ECJ2VF1H104Z	CAP,C .1UF-Z-50V	
C866	ECA1AHG471B	CAP,E 470-10V	
C867	ECJ2VF1H104Z	CAP,C .1UF-Z-50V	
C869	EEUFC1V681E	CAP,E 680UF-35V	
C870	EEUFC1C681LE	CAP,E 680UF-16V	
C871	ECJ2VF1H104Z	CAP,C .1UF-Z-50V	
C872	ECJ2VF1H104Z	CAP,C .1UF-Z-50V	
C873	ECA0JM221B	CAP,E 220UF-6.3V	
C873	ECA1CM221B	CAP,E 10UF-16V	
C875	EEUFC1V681E	CAP,E 680UF-35V	
C876	EEUFC1C681LE	CAP,E 680UF-16V	
C877	ECJ2VF1H104Z	CAP,C .1UF-Z-50V	
C878	ECJ2VF1H104Z	CAP,C .1UF-Z-50V	
C879	ECA0JM221B	CAP,E 220UF-6.3V	
C881	EEUFC1V681E	CAP,E 680UF-35V	
C882	EEUFC1C681LE	CAP,E 680UF-16V	
C883	ECJ2VF1H104Z	CAP,C .1UF-Z-50V	
C884	ECJ2VF1H104Z	CAP,C .1UF-Z-50V	
C885	ECA0JM221B	CAP,E 220UF-6.3V	
C885	ECA1CM221B	CAP,E 10UF-16V	
C886	ECJ2VF1H104Z	CAP,C .1UF-Z-50V	
C887	ECA1VHG101B	CAP,E 100UF-35V	
C888	ECJ2VF1H104Z	CAP,C .1UF-Z-50V	
C889	ECJ2VF1H104Z	CAP,C .1UF-Z-50V	
C954	ECA1CM471B	CAP,E 470UF-16V	
C955	ECJ2VF1H104Z	CAP,C .1UF-Z-50V	
C956	ECA1CM471B	CAP,E 470UF-16V	
C957	ECJ2VF1H104Z	CAP,C .1UF-Z-50V	
C958	ECA1CM471B	CAP,E 470UF-16V	
C959	ECJ2VF1H104Z	CAP,C .1UF-Z-50V	
C960	ECA1CM471B	CAP,E 470UF-16V	
C961	ECJ2VF1H104Z	CAP,C .1UF-Z-50V	
C962	ECA1CM471B	CAP,E 470UF-16V	
C963	ECJ2VF1H104Z	CAP,C .1UF-Z-50V	
C964	ECA1CM471B	CAP,E 470UF-16V	
C965	ECJ2VF1H104Z	CAP,C .1UF-Z-50V	
C966	ECJ2VF1H104Z	CAP,C .1UF-Z-50V	
C967	ECJ2VF1H104Z	CAP,C .1UF-Z-50V	
C968	ECA1CM471B	CAP,E 470UF-16V	
C969	ECJ2VF1H104Z	CAP,C .1UF-Z-50V	
C970	ECA1CM471B	CAP,E 470UF-16V	
C971	ECJ2VF1H104Z	CAP,C .1UF-Z-50V	
C2301	ECJ2VF1H104Z	CAP,C .1UF-Z-50V	
C2302	ECJ2VF1H104Z	CAP,C .1UF-Z-50V	
C2303	EEUFC1E222E	CAP,E 2200UF-25V	
C2304	EEUFC1E222E	CAP,E 2200UF-25V	
C2305	ECJ2VF1H104Z	CAP,C .1UF-Z-50V	
C2306	ECJ2VF1H104Z	CAP,C .1UF-Z-50V	
C2311	ECJ3VB1C474K	CAP,C .47UF-K-16V	
C2315	ECQB1H104JF3	CAP,P .10UF-J-50V	
C2321	ECJ3VB1C474K	CAP,C .47UF-K-16V	
C2325	ECQB1H104JF3	CAP,P .10UF-J-50V	
C2336	ECJ2VF1H104Z	CAP,C .1UF-Z-50V	
C2337	ECA1HM101B	CAP,E 100UF-50V	
C2338	ECA1HM101B	CAP,E 100UF-50V	
C2339	ECJ2VF1H104Z	CAP,C .1UF-Z-50V	
C2340	ECJ3VB1C474K	CAP,C .47UF-K-16V	
C2341	ECJ3VB1C474K	CAP,C .47UF-K-16V	
C2350	ECA50YT3R3KB	CAP,E 3.3UF-50V	
C3001	ECJ1VF1A105Z	CAP,C 1UF-Z-125V	
C3002	ECJ2VB1H332K	CAP,C .0033UF-K-50V	
C3003	ECJ2VB1H333K	CAP,C .033UF-K-50V	
C3004	ECJ2VB1H222K	CAP,C .0022UF-K-50V	
C3004	ECJ2VB1H332K	CAP,C .0033UF-K-50V	

Ref. No.	Part No.	Part Name & Description	Remarks
C3005	ECJ2VB1C224K	CAP,C .22UF-K-16V	
C3006	ECJ2VF1C105Z	CAP,C 1.0UF-Z-16V	
C3007	ECJ2VB1C104K	CAP,C .1UF-K-16V	
C3008	ECJ2VF1C105Z	CAP,C 1.0UF-Z-16V	
C3009	ECJ2VF1C105Z	CAP,C 1.0UF-Z-16V	
C3010	ECJ2VF1C105Z	CAP,C 1.0UF-Z-16V	
C3011	ECJ2VF1C105Z	CAP,C 1.0UF-Z-16V	
C3012	ECJ1VF1A105Z	CAP,C 1UF-Z-125V	
C3013	ECJ2VB1H332K	CAP,C .0033UF-K-50V	
C3014	ECJ2VB1H333K	CAP,C .0033UF-K-50V	
C3015	ECJ2VB1H222K	CAP,C .0022UF-K-50V	
C3015	ECJ2VB1H332K	CAP,C .0033UF-K-50V	
C3016	ECJ2VB1C224K	CAP,C .22UF-K-16V	
C3017	ECJ2VB1C104K	CAP,C .1UF-K-16V	
C3018	ECJ2VF1C105Z	CAP,C 1.0UF-Z-16V	
C3019	ECJ2VF1C105Z	CAP,C 1.0UF-Z-16V	
C3020	ECJ2VF1C105Z	CAP,C 1.0UF-Z-16V	
C3021	ECJ1VF1C104Z	CAP,C .10UF-Z-16V	
C3022	ECA1CM221B	CAP,E 10UF-16V	
C3023	ECJ1VF1C104Z	CAP,C .10UF-Z-16V	
C3024	ECA1CM101B	CAP,E 100UF-16V	
C3025	ECJ1VF1A105Z	CAP,C 1UF-Z-125V	
C3026	ECJ1VF1A105Z	CAP,C 1UF-Z-125V	
C3027	ECJ1VF1A105Z	CAP,C 1UF-Z-125V	
C3028	ECJ1VF1A105Z	CAP,C 1UF-Z-125V	
C3029	ECJ1VF1A105Z	CAP,C 1UF-Z-125V	
C3030	ECJ1VF1A105Z	CAP,C 1UF-Z-125V	
C3031	ECJ1VF1A105Z	CAP,C 1UF-Z-125V	
C3032	ECJ1VF1A105Z	CAP,C 1UF-Z-125V	
C3033	ECJ1VF1A105Z	CAP,C 1UF-Z-125V	
C3034	ECJ1VF1A105Z	CAP,C 1UF-Z-125V	
C3035	ECJ1VF1A105Z	CAP,C 1UF-Z-125V	
C3038	ECJ1VF1A105Z	CAP,C 1UF-Z-125V	
C3039	ECJ2VF1C104Z	CAP,C .1UF-Z-16V	
C3040	F1H1A1050028	CAP,C 1UF-10V	
C3041	F1H1A1050028	CAP,C 1UF-10V	
C3042	ECJ1VF1C104Z	CAP,C .10UF-Z-16V	
C3043	ECJ1VF1C104Z	CAP,C .10UF-Z-16V	
C3044	ECJ1VF1A105Z	CAP,C 1UF-Z-125V	
C3045	F1H1A1050028	CAP,C 1UF-10V	
C3046	ECJ1VF1A105Z	CAP,C 1UF-Z-125V	
C3047	F1H1A1050028	CAP,C 1UF-10V	
C3048	ECJ1VF1A105Z	CAP,C 1UF-Z-125V	
C3049	ECJ1VF1C104Z	CAP,C .10UF-Z-16V	
C3050	ECJ2VF1C104Z	CAP,C .1UF-Z-16V	
C3051	ECJ1VF1A105Z	CAP,C 1UF-Z-125V	
C3053	ECJ1VF1A105Z	CAP,C 1UF-Z-125V	
C3054	ECJ2VF1C104Z	CAP,C .1UF-Z-16V	
C3055	ECJ1VF1C104Z	CAP,C .10UF-Z-16V	
C3056	ECA1CM101B	CAP,E 100UF-16V	
C3057	ECJ1VF1A105Z	CAP,C 1UF-Z-125V	
C3058	ECJ2VF1C104Z	CAP,C .1UF-Z-16V	
C3059	ECJ1VF1A105Z	CAP,C 1UF-Z-125V	
C3060	ECJ1VF1C104Z	CAP,C .10UF-Z-16V	
C3061	ECJ1VF1A105Z	CAP,C 1UF-Z-125V	
C3063	ECJ1VF1A105Z	CAP,C 1UF-Z-125V	
C3064	F1H1A1050028	CAP,C 1UF-10V	
C3065	ECA1HM220B	CAP,E 22UF-50V	
C3066	ECJ1VF1A105Z	CAP,C 1UF-Z-125V	
C3067	F1H1A1050028	CAP,C 1UF-10V	
C3068	ECJ1VF1C104Z	CAP,C .10UF-Z-16V	
C3070	ECJ2VF1C104Z	CAP,C .1UF-Z-16V	
C3071	F1H1A1050028	CAP,C 1UF-10V	
C3072	F1H1A1050028	CAP,C 1UF-10V	
C3073	ECJ2VF1C104Z	CAP,C .1UF-Z-16V	
C3074	ECJ1VF1C104Z	CAP,C .10UF-Z-16V	
C3075	F1H1A1050028	CAP,C 1UF-10V	
C3076	ECA1HM220B	CAP,E 22UF-50V	
C3077	F1H1A1050028	CAP,C 1UF-10V	
C3081	ECJ1VF1A105Z	CAP,C 1UF-Z-125V	
C3083	ECJ1VF1A105Z	CAP,C 1UF-Z-125V	
C3084	ECJ1VF1A105Z	CAP,C 1UF-Z-125V	
C3085	ECJ1VF1A105Z	CAP,C 1UF-Z-125V	

Ref. No.	Part No.	Part Name & Description	Remarks
C3087	F1H1A1050028	CAP,C 1UF-10V	
C3088	F1H1A1050028	CAP,C 1UF-10V	
C3089	F1H1A1050028	CAP,C 1UF-10V	
C3090	F1H1A1050028	CAP,C 1UF-10V	
C3091	F1H1A1050028	CAP,C 1UF-10V	
C3092	F1H1A1050028	CAP,C 1UF-10V	
C3093	ECA1CM221B	CAP,E 10UF-16V	
C3094	ECJ1VF1A105Z	CAP,C 1UF-Z-125V	
C3096	ECJ1VF1C104Z	CAP,C .10UF-Z-16V	
C3098	ECA1CM221B	CAP,E 10UF-16V	
C3099	ECA1CM221B	CAP,E 10UF-16V	
C3100	ECJ2VF1C105Z	CAP,C 1.0UF-Z-16V	
C3101	ECJ2VF1C105Z	CAP,C 1.0UF-Z-16V	
C3102	ECJ2VF1C105Z	CAP,C 1.0UF-Z-16V	
C3103	ECJ2VF1C105Z	CAP,C 1.0UF-Z-16V	
C3104	ECJ2VF1C105Z	CAP,C 1.0UF-Z-16V	
C3105	ECJ2VF1C105Z	CAP,C 1.0UF-Z-16V	
C3106	ECJ2VF1C105Z	CAP,C 1.0UF-Z-16V	
C3107	ECJ2VF1C105Z	CAP,C 1.0UF-Z-16V	
C3108	ECJ2VF1C105Z	CAP,C 1.0UF-Z-16V	
C3109	ECJ2VF1C105Z	CAP,C 1.0UF-Z-16V	
C3110	ECJ2VF1C105Z	CAP,C 1.0UF-Z-16V	
C3111	ECJ2VF1C105Z	CAP,C 1.0UF-Z-16V	
C3113	ECA1CM471B	CAP,E 470UF-16V	
C3116	ECA1CM471B	CAP,E 470UF-16V	
C3121	ECJ2VF1C105Z	CAP,C 1.0UF-Z-16V	
C3122	ECJ2VF1C105Z	CAP,C 1.0UF-Z-16V	
C3123	ECJ2VF1C105Z	CAP,C 1.0UF-Z-16V	
C3124	ECJ2VF1C105Z	CAP,C 1.0UF-Z-16V	
C3125	ECJ2VF1C105Z	CAP,C 1.0UF-Z-16V	
C3126	ECJ2VF1C105Z	CAP,C 1.0UF-Z-16V	
C3127	ECJ2VF1C105Z	CAP,C 1.0UF-Z-16V	
C3128	ECJ2VF1C105Z	CAP,C 1.0UF-Z-16V	
C3129	ECJ2VF1C105Z	CAP,C 1.0UF-Z-16V	
C3130	ECJ2VF1C105Z	CAP,C 1.0UF-Z-16V	
C3131	ECJ2VF1C105Z	CAP,C 1.0UF-Z-16V	
C3132	ECJ2VF1C105Z	CAP,C 1.0UF-Z-16V	
C3133	ECJ2VF1C105Z	CAP,C 1.0UF-Z-16V	
C3134	ECJ2VF1C105Z	CAP,C 1.0UF-Z-16V	
C3135	ECJ2VF1C105Z	CAP,C 1.0UF-Z-16V	
C3143	ECJ1VF1A105Z	CAP,C 1UF-Z-125V	
C3145	ECEA1CN100UB	CAP,E 10UF-16V	
C3146	ECEA1CN100UB	CAP,E 10UF-16V	
C3147	ECJ1VF1C104Z	CAP,C .10UF-Z-16V	
C3148	ECA1HM100B	CAP,E 10UF-50V	
C3149	ECA1HM100B	CAP,E 10UF-50V	
C3150	ECJ2VF1C105Z	CAP,C 1.0UF-Z-16V	
C3151	ECJ2VF1C105Z	CAP,C 1.0UF-Z-16V	
C3152	ECJ2VF1C105Z	CAP,C 1.0UF-Z-16V	
C3153	ECJ2VF1C105Z	CAP,C 1.0UF-Z-16V	
C3154	ECJ2VC1H080C	CAP,C 08PF-C-50V	
C3155	ECJ2VC1H080C	CAP,C 08PF-C-50V	
C3156	ECJ2VC1H080C	CAP,C 08PF-C-50V	
C3157	ECJ2VC1H080C	CAP,C 08PF-C-50V	
C3158	ECJ2VC1H080C	CAP,C 08PF-C-50V	
C3159	ECJ2VC1H080C	CAP,C 08PF-C-50V	
C3160	ECJ2VF1C105Z	CAP,C 1.0UF-Z-16V	
C3161	ECJ2VF1C105Z	CAP,C 1.0UF-Z-16V	
C3201	ECJ2VF1H104Z	CAP,C .1UF-Z-50V	
CN3203	K1FB115A0019	CONNECTOR, FOR I/F U	
DIODES			
D011	MAZ41500MF	DIODE, ZENER	
D012	MAZ41500MF	DIODE, ZENER	
D801	D4EAB3610002	DIODE	△
D802	D3SB80-4101	DIODE	△
D803	D3SB80-4101	DIODE	△
D804	EG01AF7	DIODE	
D805	AU01ZV0	DIODE	
D806	B0BA01000046	DIODE, VOLTAGE REGUL	
D807	MA2C17800E	DIODE	
D808	MA2C700A0F	DIODE	
D809	MA2C029WBF	DIODE	
D810	MA2C700A0F	DIODE	

Ref. No.	Part No.	Part Name & Description	Remarks
D811	MAZ32700LL	DIODE, ZENER	
D812	SF5L60U-4115	GERMANIUM DIODE	
D813	MA2C17800E	DIODE	
D814	AU01ZV0	DIODE	
D815	MA2C700A0F	DIODE	
D816	MA3X152K0L	DIODE	
D841	RL4ZLF-J6	DIODE	
D842	RL4ZLF-J6	DIODE	
D843	SF5LC30-4115	GERMANIUM DIODE	
D844	SF5LC30-4115	GERMANIUM DIODE	
D845	SF5LC30-4115	GERMANIUM DIODE	
D846	MA3X152K0L	DIODE	
D847	MAZ30510ML	DIODE, ZENER	
D849	MA3X152K0L	DIODE	
D850	MAZ30360HL	DIODE, ZENER	
D851	B0JCME000025	DIODE, SCHOTTKY BARR	
D852	MAZ31500ML	DIODE, ZENER	
D853	B0JANE000009	DIODE SCHOTTKY BARRI	
D854	MAZ31500ML	DIODE, ZENER	
D855	B0JCME000025	DIODE, SCHOTTKY BARR	
D856	MAZ31500ML	DIODE, ZENER	
D857	MAZ30360HL	DIODE, ZENER	
D858	MA3X152K0L	DIODE	
D859	MA3X152K0L	DIODE	
D860	MAZ30360HL	DIODE, ZENER	
D861	MA3X152E0L	DIODE	
D862	B0EBKT000003	DIODE, RECTIFIER	
D863	MA3X72000L	DIODE	
D950	MA3X152E0L	DIODE	
D951	MA3X152E0L	DIODE	
D952	MA3X152K0L	DIODE	
D953	MAZ30330HL	DIODE, ZENER	
D1001	B3AGA0000072	DIODE	
D1002	MAZ40560MF	DIODE, ZENER	
D1003	MAZ40560MF	DIODE, ZENER	
D2301	MAZ42000MF	DIODE, ZENER	
D2303	MAZ42000MF	DIODE, ZENER	
D2331	MAZ40390HF	DIODE, ZENER	
D2332	MA3X152K0L	DIODE	
D3002	MAZ31100ML	DIODE, ZENER	
D3003	MAZ31100ML	DIODE, ZENER	
D3004	MAZ31100ML	DIODE, ZENER	
D3005	MAZ31100ML	DIODE, ZENER	
D3006	MAZ31100ML	DIODE, ZENER	
D3007	MAZ31100ML	DIODE, ZENER	
D3008	MAZ31100ML	DIODE, ZENER	
D3009	MAZ31100ML	DIODE, ZENER	
D3010	MAZ31100ML	DIODE, ZENER	
D3011	MAZ31100ML	DIODE, ZENER	
D3013	MAZ31100ML	DIODE, ZENER	
D3014	MAZ31100ML	DIODE, ZENER	
D3015	MAZ31100ML	DIODE, ZENER	
D3016	MAZ31100ML	DIODE, ZENER	
D3017	MAZ31100ML	DIODE, ZENER	
D3018	MAZ31100ML	DIODE, ZENER	
D3019	MAZ31100ML	DIODE, ZENER	
D3020	MAZ31100ML	DIODE, ZENER	
D3021	MAZ31100ML	DIODE, ZENER	
D3022	MAZ31100ML	DIODE, ZENER	
D3023	MAZ31100ML	DIODE, ZENER	
D3024	MAZ31100ML	DIODE, ZENER	
D3025	MAZ31100ML	DIODE, ZENER	
D3026	MAZ31100ML	DIODE, ZENER	
D3027	MAZ31100ML	DIODE, ZENER	
D3028	MAZ31100ML	DIODE, ZENER	
D3029	MAZ31100ML	DIODE, ZENER	
D3030	MAZ31100ML	DIODE, ZENER	
D3031	MAZ31100ML	DIODE, ZENER	
D3032	MAZ31100ML	DIODE, ZENER	
D3201	MAZ31100ML	DIODE, ZENER	
D3202	MAZ31100ML	DIODE, ZENER	
D3203	MAZ31100ML	DIODE, ZENER	
D3204	MAZ31100ML	DIODE, ZENER	

Ref. No.	Part No.	Part Name & Description	Remarks
D3205	MAZ31100ML	DIODE, ZENER	
D3206	MAZ31100ML	DIODE, ZENER	
D3207	MAZ31100ML	DIODE, ZENER	
D3208	MAZ31100ML	DIODE, ZENER	
D3209	MAZ31100ML	DIODE, ZENER	
D3210	MAZ31100ML	DIODE, ZENER	
D3211	MAZ31100ML	DIODE, ZENER	
D3212	MAZ31100ML	DIODE, ZENER	
D3213	MAZ31100ML	DIODE, ZENER	
D3214	MAZ31100ML	DIODE, ZENER	
D3215	MAZ31100ML	DIODE, ZENER	
D3216	MAZ31100ML	DIODE, ZENER	
D3217	MAZ31100ML	DIODE, ZENER	
FUSES			
F801	K5D632AD0002	FUSE, 6.3A/125V	△
INTEGRATED CIRCUITS			
IC005	AN5849S-E1V	INT CKT	
IC800	0N3171R	INT CKT	△
IC801	AN8026	INT CKT	
IC802	C0DBZZZ00063	IC FOR POWER SUPPLY	
IC841	AN1431T-TA	INT CKT	
IC842	C0DAEGG00007	IC FOR POWER SUPPLY	
IC843	C0DAAZH00009	IC FOR POWER SUPPLY	
IC844	C0DAAZH00009	IC FOR POWER SUPPLY	
IC845	C0DAAZH00009	IC FOR POWER SUPPLY	
IC951	C0DAEGG00007	IC FOR POWER SUPPLY	
IC952	C0DAEGG00007	IC FOR POWER SUPPLY	
IC953	C0DAEGG00007	IC FOR POWER SUPPLY	
IC954	C0CACAG00001	IC VOLTAGE RE	
IC2301	C1AA00000660	IC FOR VIDEO EQUIPME	
IC3001	C1BB00000772	INT CKT	
IC3002	C1AB000001875	INT CKT	
IC3003	C1AB000001874	INT CKT	
IC3004	C0ABBA000073	IC OPERATIONAL AMPL	
RM1101	PNA4611M00YA	PHOTO DETECTOR	
COILS			
L011	ELELN330JA	COIL, PEAKING 33UH	
L014	ELESN100JA	COIL, PEAKING 10UH	
L021	ELELN330JA	COIL, PEAKING 33UH	
L804	ETS28AW1B9AC	COIL CHOKE	△
L805	EXCELSA35B	FERRITE BEAD	
L806	EXCELSA35B	FERRITE BEAD	
L807	EXCELSA35B	FERRITE BEAD	
L808	EXCELD35V	FERRITE BEAD	
L809	EXCELSA39E	FERRITE BEAD	
L810	EXCELSA24T	FERRITE BEAD	
L811	EXCELSA39E	FERRITE BEAD	
L812	EXCELSA39E	FERRITE BEAD	
L813	EXCELD35C	FERRITE BEAD	
L841	EXCELD35C	FERRITE BEAD	
L842	EXCELD35C	FERRITE BEAD	
L843	EXCELD35C	FERRITE BEAD	
L844	EXCELD35C	FERRITE BEAD	
L845	EXCELD35C	FERRITE BEAD	
L846	TALFP15B101K	COIL CHOKE	
L847	TALL08T220KA	COIL	
L848	TALFP15B101K	COIL CHOKE	
L849	TALL08T220KA	COIL	
L850	TALFP15B101K	COIL CHOKE	
L851	TALL08T220KA	COIL	
L852	G0A101E00003	COIL, LINE CHOKE	
L853	G0A101E00003	COIL, LINE CHOKE	
L854	G0A101E00003	COIL, LINE CHOKE	
L855	EXCELSA39V	FERRITE BEAD	
L856	EXCELSA39V	FERRITE BEAD	
L857	EXCELD35V	FERRITE BEAD	
L858	EXCELD35V	FERRITE BEAD	
L2301	EXCELSA35V	FERRITE BEAD	
L2302	EXCELSA35V	FERRITE BEAD	
L2303	TALL08T330KA	COIL	
L2304	TALL08T330KA	COIL	
L3001	J0JHC0000078	FILTER	
L3002	J0JHC0000078	FILTER	

Ref. No.	Part No.	Part Name & Description	Remarks
L3003	J0JHC0000078	FILTER	
L3004	J0JHC0000078	FILTER	
L3005	J0JHC0000078	FILTER	
L3006	J0JHC0000078	FILTER	
L3007	J0JHC0000078	FILTER	
L3008	J0JHC0000078	FILTER	
L3009	J0JHC0000078	FILTER	
LF801	ELF18D650M	COIL, LINE FILTER	△
LF802	GOB402K00001	LINE FILTER	△
LF803	ELF18D650M	COIL, LINE FILTER	△
TRANSISTORS			
Q801	B1DEGR000020	TRANSISTOR	
Q802	B1DEGR000020	TRANSISTOR	
Q803	2SB621ATA	TRANSISTOR	
Q842	2SD601ARTX	TRANSISTOR	
Q844	2SB709ARTX	TRANSISTOR	
Q845	2SB709ARTX	TRANSISTOR	
Q950	2SD601ARTX	TRANSISTOR	
Q1001	2SB709ARTX	TRANSISTOR	
Q1002	2SB709ARTX	TRANSISTOR	
Q2301	2SC1473ATA	TRANSISTOR	
Q2302	2SC1473ATA	TRANSISTOR	
Q2331	2SD601ARTX	TRANSISTOR	
Q3001	2SD601ARTX	TRANSISTOR	
Q3002	2SD601ARTX	TRANSISTOR	
Q3003	2SD601ARTX	TRANSISTOR	
Q3004	2SD601ARTX	TRANSISTOR	
Q3005	2SD601ARTX	TRANSISTOR	
Q3006	2SD601ARTX	TRANSISTOR	
Q3007	2SD601ARTX	TRANSISTOR	
Q3008	2SD601ARTX	TRANSISTOR	
Q3009	2SB709ARTX	TRANSISTOR	
Q3011	2SB709ARTX	TRANSISTOR	
Q3013	2SD601ARTX	TRANSISTOR	
Q3014	2SD601ARTX	TRANSISTOR	
Q3015	2SD601ARTX	TRANSISTOR	
Q3016	2SD601ARTX	TRANSISTOR	
Q3017	2SD601ARTX	TRANSISTOR	
Q3018	2SD601ARTX	TRANSISTOR	
RELAYS			
RL801	K6B1ADA00010	RELAY	△
RL802	K6B1ADA00010	RELAY	△
RESISTORS			
R012	ERJ6GEYJ101V	RES,M 100-J-1/10W	
R013	ERJ6GEYJ101V	RES,M 100-J-1/10W	
R022	ERJ6GEYJ101V	RES,M 100-J-1/10W	
R023	ERJ6GEYJ101V	RES,M 100-J-1/10W	
R062	ERJ6GEYJ102V	RES,M 1K-J-1/10W	
R063	ERJ6GEYJ102V	RES,M 1K-J-1/10W	
R064	ERJ6GEYJ222V	RES,M 2.2K-J-1/10W	
R065	ERJ6GEYJ101V	RES,M 100-J-1/10W	
R801	D1F53R3EA001	RES,M 3.3-1/2W	△
R802	ERG2FJ393H	RES,M 39K-J-2W	
R803	ERDS1FJ100T	RES,C 10-J-1/2W	
R804	ERX12SJR47P	RES,M .47-J-1/2W	
R805	ERX12SJR47P	RES,M .47-J-1/2W	
R806	ERDS1FJ561T	RES,C 560-J-1/2W	
R807	ERDS1FJ470T	RES,C 47-J-1/2W	
R808	ERDS1FJ100T	RES,C 10-J-1/2W	
R809	ERJ6GEYJ122V	RES,M 1.2K-J-1/10W	
R810	ERJ6GEYJ102V	RES,M 1K-J-1/10W	
R811	ERJ6GEYJ682V	RES,M 6.8K-J-1/10W	
R812	ERJ6ENF6800V	RES,M 680-F-1/10W	
R813	ERJ6GEYJ101V	RES,M 100-J-1/10W	
R814	ERJ6GEYJ331V	RES,M 330-J-1/10W	
R815	ERDS2TJ103T	RES,C 10K-J-1/4W	
R816	ERJ6GEYJ153V	RES,M 15K-J-1/10W	
R817	ERJ6GEYJ104V	RES,M 100K-J-1/10W	
R818	ERJ6ENF8203V	RES,M 820K-F-1	
R819	ERJ6ENF8203V	RES,M 820K-F-1	
R820	ERJ6ENF1202V	RES,M 1.2K-F-1/10W	
R821	ERG3FJ333H	RES,M 33K-J-3W	
R822	ERG3FJ333H	RES,M 33K-J-3W	

Ref. No.	Part No.	Part Name & Description	Remarks
R824	ERJ6GEYJ223V	RES,M 22K-J-1/10W	
R825	ERJ6GEYJ331V	RES,M 330-J-1/10W	
R826	ERJ6GEYJ100V	RES,M 10-J-1/10W	
R827	ERJ6ENF1002V	RES,M 10K-F-1/10W	
R828	ERX12SJR33P	RES,M .33-J-1/2W	
R829	ERDS1FJ103T	RES,C 10K-J-1/2W	
R830	ERDS1FJ8R2T	RES,C 8.2-J-1/2W	
R831	ERJ6ENF3303V	RES,M 330K-F-1	
R832	ERJ6ENF3303V	RES,M 330K-F-1	
R833	ERJ6ENF3303V	RES,M 330K-F-1	
R834	ERJ6ENF3303V	RES,M 330K-F-1	
R835	ERDS1FJ220T	RES,C 22-F-1/2	
R836	ERDS1FJ2R7T	RES,C 2.7-J-1/2W	
R837	ERG3FJ333H	RES,M 33K-J-3W	
R839	ERX12SJR33P	RES,M .33-J-1/2W	
R840	ERJ6GEYJ394V	RES,M 390K-J-1/10W	
R841	ERJ6GEYJ223V	RES,M 22K-J-1/10W	
R842	ERJ6GEYJ223V	RES,M 22K-J-1/10W	
R843	ERJ6GEYJ223V	RES,M 22K-J-1/10W	
R844	ERJ6GEYJ223V	RES,M 22K-J-1/10W	
R845	ERX2FJSR47D	RES,M .47-J-2W	
R846	ERJ6GEYJ102V	RES,M 1K-J-1/10W	
R847	ERJ6GEYJ332V	RES,M 3.3K-J-1/10W	
R848	ERJ6GEYJ332V	RES,M 3.3K-J-1/10W	
R849	ERJ6GEYJ223V	RES,M 22K-J-1/10W	
R850	ERJ6GEYJ101V	RES,M 100-J-1/10W	
R851	ERJ6GEYJ103V	RES,M 10K-J-1/10W	
R852	ERJ6ENF2802V	RES,M 28K-F-1/	
R853	ERJ6ENF2431V	RES,M 2.43K-F-1/10W	
R854	ERJ6GEYJ332V	RES,M 3.3K-J-1/10W	
R855	ERJ6GEYJ104V	RES,M 100K-J-1/10W	
R856	ERDS2TJ102T	RES,C 1K-J-1/4W	
R857	ERJ6GEYJ103V	RES,M 10K-J-1/10W	
R858	ERJ6ENF1002V	RES,M 10K-F-1/10W	
R858	ERJ6GEYJ103V	RES,M 10K-J-1/10W	
R859	ERJ6ENF2002V	RES,M 20K-F-1/10W	
R860	ERDS1FJ100T	RES,C 10-J-1/2W	
R861	ERJ6GEYJ331V	RES,M 330-J-1/10W	
R862	ERJ6GEYJ332V	RES,M 3.3K-J-1/10W	
R863	ERJ6GEYJ104V	RES,M 100K-J-1/10W	
R864	ERJ6ENF1001V	RES,M 1K-F-1/10W	
R865	ERJ6ENF4700V	RES,M 470-F-1/10W	
R867	ERJ6ENF1001V	RES,M 1K-F-1/10W	
R868	ERJ6ENF6191V	RES,M 6190-F-1/10W	
R870	ERJ6ENF1001V	RES,M 1K-F-1/10W	
R871	ERJ6ENF1651V	RES,M 1.65K-F-1/10W	
R873	ERJ6ENF1001V	RES,M 1K-F-1/10W	
R874	ERJ6ENF8661V	RES,M 8.66K-F-1/10W	
R876	ERJ6GEYJ332V	RES,M 3.3K-J-1/10W	
R877	ERJ6GEYJ104V	RES,M 100K-J-1/10W	
R878	ERJ6GEYJ102V	RES,M 1K-J-1/10W	
R879	ERDS1FJ101T	RES,C 100-J-1/2W	
R881	ERJ6GEYJ332V	RES,M 3.3K-J-1/10W	
R882	ERJ6GEYJ332V	RES,M 3.3K-J-1/10W	
R885	ERDS2TJ101T	RES,C 100-J-1/4W	
R886	ERJ6GEYJ332V	RES,M 3.3K-J-1/10W	
R887	ERJ6GEYJ103V	RES,M 10K-J-1/10W	
R890	ERJ6GEYJ104V	RES,M 100K-J-1/10W	
R897	ERDS2TJ472T	RES,C 4.7K-J-1/4W	
R898	ERJ6GEYJ394V	RES,M 390K-J-1/10W	
R899	ERJ6GEYJ394V	RES,M 390K-J-1/10W	
R953	ERJ6ENF1001V	RES,M 1K-F-1/10W	
R954	ERJ6ENF4700V	RES,M 470-F-1/10W	
R959	ERJ6ENF1001V	RES,M 1K-F-1/10W	
R960	ERJ6ENF1001V	RES,M 1K-F-1/10W	
R960	EROS2THF1301	RES, M 1.3K-F-14/4W	
R961	ERJ6GEYJ103V	RES,M 10K-J-1/10W	
R962	ERJ6GEYJ331V	RES,M 330-J-1/10W	
R963	ERJ6GEYJ104V	RES,M 100K-J-1/10W	
R964	ERJ6GEYJ332V	RES,M 3.3K-J-1/10W	
R967	ERDS2TJ332T	RES,C 3.3K-J-1/4W	
R967	ERJ6GEYJ332V	RES,M 3.3K-J-1/10W	
R968	ERDS2TJ332T	RES,C 3.3K-J-1/4W	

Ref. No.	Part No.	Part Name & Description	Remarks
R968	ERJ6GEYJ332V	RES,M 3.3K-J-1/10W	
R971	ERDS2TJ332T	RES,C 3.3K-J-1/4W	
R971	ERJ6GEYJ332V	RES,M 3.3K-J-1/10W	
R972	ERJ6GEYJ104V	RES,M 100K-J-1/10W	
R975	ERJ6GEYJ103V	RES,M 10K-J-1/10W	
R1001	ERJ6GEYJ103V	RES,M 10K-J-1/10W	
R1002	ERJ6GEYJ103V	RES,M 10K-J-1/10W	
R1003	ERJ6GEYJ271V	RES,M 270-J-1/10W	
R1004	ERJ6GEYJ151V	RES,M 150-J-1/10W	
R1005	ERJ6GEYJ103V	RES,M 10K-J-1/10W	
R1006	ERJ6GEYJ103V	RES,M 10K-J-1/10W	
R1007	ERJ6GEYJ392V	RES,M 3.9K-J-1/10W	
R1008	ERJ6GEYJ392V	RES,M 3.9K-J-1/10W	
R1009	ERJ6ENF1651V	RES,M 1.65K-F-1/10W	
R1010	ERJ6ENF1651V	RES,M 1.65K-F-1/10W	
R2301	ERGLSJ102P	RES,M 1K-J-1W	
R2302	ERGLSJ102P	RES,M 1K-J-1W	
R2303	ERDS2TJ471T	RES,C 470-J-1/4W	
R2304	ERGLSJ102P	RES,M 1K-J-1W	
R2305	ERGLSJ102P	RES,M 1K-J-1W	
R2306	ERDS2TJ471T	RES,C 470-J-1/4W	
R2311	ERJ6GEYJ183V	RES,M 18K-J-1/10W	
R2313	ERJ6GEYJ471V	RES,M 470-J-1/10W	
R2313	ERJ6GEYJ751V	RES,M 750-J-1/10W	
R2314	ERJ6GEYJ471V	RES,M 470-J-1/10W	
R2315	ERX1S4R7P	RES,M 4.7-J-1W	
R2321	ERJ6GEYJ183V	RES,M 18K-J-1/10W	
R2323	ERJ6GEYJ471V	RES,M 470-J-1/10W	
R2323	ERJ6GEYJ751V	RES,M 750-J-1/10W	
R2324	ERJ6GEYJ471V	RES,M 470-J-1/10W	
R2325	ERX1S4R7P	RES,M 4.7-J-1W	
R2333	ERJ6GEYJ183V	RES,M 18K-J-1/10W	
R2334	ERJ6GEYJ103V	RES,M 10K-J-1/10W	
R2336	ERJ6GEYJ471V	RES,M 470-J-1/10W	
R2337	ERDS2TJ392T	RES,C 3.9K-J-1/4W	
R2338	ERJ6GEYJ104V	RES,M 100K-J-1/10W	
R3001	ERJ6GEYJ471V	RES,M 470-J-1/10W	
R3002	ERJ6GEYJ681V	RES,M 680-J-1/10W	
R3003	ERJ6GEYJ101V	RES,M 100-J-1/10W	
R3004	ERJ6GEYJ101V	RES,M 100-J-1/10W	
R3005	ERJ6GEYJ471V	RES,M 470-J-1/10W	
R3006	ERJ6GEYJ471V	RES,M 470-J-1/10W	
R3007	ERJ6GEYJ471V	RES,M 470-J-1/10W	
R3008	ERJ6GEYJ471V	RES,M 470-J-1/10W	
R3009	ERJ6GEYJ471V	RES,M 470-J-1/10W	
R3010	ERJ6GEYJ471V	RES,M 470-J-1/10W	
R3011	ERJ6GEYJ471V	RES,M 470-J-1/10W	
R3014	ERJ6GEYJ471V	RES,M 470-J-1/10W	
R3015	ERJ6GEYJ471V	RES,M 470-J-1/10W	
R3018	ERJ6GEYJ471V	RES,M 470-J-1/10W	
R3019	ERJ6GEYJ471V	RES,M 470-J-1/10W	
R3022	ERJ6GEYJ471V	RES,M 470-J-1/10W	
R3024	ERJ6GEYJ681V	RES,M 680-J-1/10W	
R3025	ERJ6GEYJ471V	RES,M 470-J-1/10W	
R3026	ERJ3GEYJ102V	RES,M 1K-J-1/32W	
R3027	ERJ3GEYJ102V	RES,M 1K-J-1/32W	
R3028	ERJ3GEYJ102V	RES,M 1K-J-1/32W	
R3029	ERJ3GEYJ102V	RES,M 1K-J-1/32W	
R3030	ERJ3GEYJ102V	RES,M 1K-J-1/32W	
R3031	ERJ3GEYJ102V	RES,M 1K-J-1/32W	
R3033	ERJ3GEYJ102V	RES,M 1K-J-1/32W	
R3034	ERJ3GEYJ102V	RES,M 1K-J-1/32W	
R3035	ERJ6GEYJ104V	RES,M 100K-J-1/10W	
R3037	ERJ3GEYJ102V	RES,M 1K-J-1/32W	
R3039	ERJ3GEYJ102V	RES,M 1K-J-1/32W	
R3041	ERJ3GEYJ102V	RES,M 1K-J-1/32W	
R3042	ERJ3GEYJ221V	RES,M 220-J-1/32W	
R3043	ERJ3GEYJ102V	RES,M 1K-J-1/32W	
R3044	ERJ3GEYJ563V	RES,M 56K-J-1/32W	
R3045	ERJ3GEYJ221V	RES,M 220-J-1/32W	
R3046	ERJ3GEYJ102V	RES,M 1K-J-1/32W	
R3048	ERJ3GEYJ102V	RES,M 1K-J-1/32W	
R3050	ERJ3GEYJ102V	RES,M 1K-J-1/32W	

Ref. No.	Part No.	Part Name & Description	Remarks
R3051	ERJ3GEYJ102V	RES,M 1K-J-1/32W	
R3052	ERJ3GEYJ221V	RES,M 220-J-1/32W	
R3053	ERJ3GEYJ102V	RES,M 1K-J-1/32W	
R3055	ERJ3GEYJ102V	RES,M 1K-J-1/32W	
R3056	ERJ3GEYJ102V	RES,M 1K-J-1/32W	
R3057	ERJ3GEYJ221V	RES,M 220-J-1/32W	
R3058	ERJ3GEYJ102V	RES,M 1K-J-1/32W	
R3060	ERJ3GEYJ102V	RES,M 1K-J-1/32W	
R3061	ERJ3GEYJ221V	RES,M 220-J-1/32W	
R3062	ERJ3GEYJ221V	RES,M 220-J-1/32W	
R3063	ERJ3GEYJ221V	RES,M 220-J-1/32W	
R3065	ERJ3GEYJ221V	RES,M 220-J-1/32W	
R3066	ERJ3GEYJ221V	RES,M 220-J-1/32W	
R3067	ERJ3GEYJ221V	RES,M 220-J-1/32W	
R3068	ERJ6GEYJ221V	RES,M 220-J-1/10W	
R3069	ERJ3GEYJ221V	RES,M 220-J-1/32W	
R3070	ERJ6GEYJ220V	RES,M 22-J-1/10W	
R3071	ERJ3GEYJ102V	RES,M 1K-J-1/32W	
R3073	ERJ6GEYJ220V	RES,M 22-J-1/10W	
R3074	ERJ3GEYJ102V	RES,M 1K-J-1/32W	
R3075	ERJ3GEYJ221V	RES,M 220-J-1/32W	
R3076	ERJ3GEYJ102V	RES,M 1K-J-1/32W	
R3077	ERJ3GEYJ102V	RES,M 1K-J-1/32W	
R3079	ERJ3GEYJ102V	RES,M 1K-J-1/32W	
R3080	ERJ3GEYJ221V	RES,M 220-J-1/32W	
R3083	ERJ3GEYJ102V	RES,M 1K-J-1/32W	
R3084	ERJ3GEYJ102V	RES,M 1K-J-1/32W	
R3085	ERJ3GEYJ221V	RES,M 220-J-1/32W	
R3086	ERJ3GEYJ102V	RES,M 1K-J-1/32W	
R3087	ERJ3GEYJ221V	RES,M 220-J-1/32W	
R3088	ERJ3GEYJ221V	RES,M 220-J-1/32W	
R3089	ERJ3GEYJ102V	RES,M 1K-J-1/32W	
R3090	ERJ3GEYJ102V	RES,M 1K-J-1/32W	
R3091	ERJ3GEYJ221V	RES,M 220-J-1/32W	
R3092	ERJ3GEYJ221V	RES,M 220-J-1/32W	
R3093	ERJ6GEYJ220V	RES,M 22-J-1/10W	
R3095	ERJ6GEYJ220V	RES,M 22-J-1/10W	
R3096	ERJ6GEYJ103V	RES,M 10K-J-1/10W	
R3098	ERJ3GEYJ221V	RES,M 220-J-1/32W	
R3099	ERJ6GEYJ103V	RES,M 10K-J-1/10W	
R3101	ERJ3GEYJ221V	RES,M 220-J-1/32W	
R3103	ERJ6GEYJ102V	RES,M 1K-J-1/10W	
R3105	ERJ3GEYJ102V	RES,M 1K-J-1/32W	
R3107	ERJ3GEYJ221V	RES,M 220-J-1/32W	
R3108	ERJ3GEYJ221V	RES,M 220-J-1/32W	
R3109	ERJ3GEYJ221V	RES,M 220-J-1/32W	
R3110	ERJ3GEYJ221V	RES,M 220-J-1/32W	
R3111	ERJ3GEYJ102V	RES,M 1K-J-1/32W	
R3112	ERJ3GEYJ221V	RES,M 220-J-1/32W	
R3113	ERJ3GEYJ221V	RES,M 220-J-1/32W	
R3114	ERJ6GEYJ103V	RES,M 10K-J-1/10W	
R3117	ERJ3GEYJ221V	RES,M 220-J-1/32W	
R3118	ERJ6GEYJ911V	RES,M 910-J-1/10W	
R3119	ERJ3GEYJ331V	RES,M 330-J-1/32W	
R3120	ERJ3GEYJ102V	RES,M 1K-J-1/32W	
R3121	ERJ6GEYJ911V	RES,M 910-J-1/10W	
R3122	ERJ6GEYJ911V	RES,M 910-J-1/10W	
R3125	ERJ6GEYJ911V	RES,M 910-J-1/10W	
R3126	ERJ3GEYJ473V	RES,M 47K-J-1/32W	
R3127	ERJ6GEYJ911V	RES,M 910-J-1/10W	
R3129	ERJ3GEYJ274V	RES,M 270K-J-1/32W	
R3130	ERJ6GEYJ911V	RES,M 910-J-1/10W	
R3133	ERJ6GEYJ911V	RES,M 910-J-1/10W	
R3134	ERJ3GEYJ105V	RES,M 1MEG-J-1/32W	
R3135	ERJ3GEYJ101V	RES,M 100-J-1/32W	
R3137	ERJ3GEYJ101V	RES,M 100-J-1/32W	
R3143	ERJ3GEYJ750V	RES,M 75-J-1/32W	
R3144	ERJ3GEYJ750V	RES,M 75-J-1/32W	
R3145	ERJ3GEYJ750V	RES,M 75-J-1/32W	
R3151	ERJ6ENF75R0V	RES,M 75.0-F-1/10W	
R3152	ERJ6ENF75R0V	RES,M 75.0-F-1/10W	
R3153	ERJ6ENF75R0V	RES,M 75.0-F-1/10W	
R3154	ERJ6ENF75R0V	RES,M 75.0-F-1/10W	

Ref. No.	Part No.	Part Name & Description	Remarks
R3155	ERJ6ENF75R0V	RES,M 75.0-F-1/10W	
R3156	ERJ6ENF75R0V	RES,M 75.0-F-1/10W	
R3157	ERJ6GEYJ184V	RES,M 180K-J-1/10W	
R3158	ERJ6GEYJ184V	RES,M 180K-J-1/10W	
R3159	ERJ6ENF75R0V	RES,M 75.0-F-1/10W	
R3161	ERJ6GEYJ184V	RES,M 180K-J-1/10W	
R3162	ERJ6GEYJ184V	RES,M 180K-J-1/10W	
R3164	ERJ6ENF75R0V	RES,M 75.0-F-1/10W	
R3165	ERJ6ENF75R0V	RES,M 75.0-F-1/10W	
R3166	ERJ6ENF75R0V	RES,M 75.0-F-1/10W	
R3167	ERJ6ENF75R0V	RES,M 75.0-F-1/10W	
R3168	ERJ6ENF75R0V	RES,M 75.0-F-1/10W	
R3169	ERJ6ENF75R0V	RES,M 75.0-F-1/10W	
R3170	ERJ6ENF75R0V	RES,M 75.0-F-1/10W	
R3171	ERJ6ENF75R0V	RES,M 75.0-F-1/10W	
R3172	ERJ6ENF75R0V	RES,M 75.0-F-1/10W	
R3173	ERJ6GEYJ184V	RES,M 180K-J-1/10W	
R3174	ERJ6GEYJ184V	RES,M 180K-J-1/10W	
R3175	ERJ6GEYJ184V	RES,M 180K-J-1/10W	
R3176	ERJ6GEYJ184V	RES,M 180K-J-1/10W	
R3177	ERJ6GEYJ184V	RES,M 180K-J-1/10W	
R3178	ERJ6GEYJ184V	RES,M 180K-J-1/10W	
R3179	ERJ3GEYJ104V	RES,M 100K-J-1/32W	
R3180	ERJ6GEYJ104V	RES,M 100K-J-1/10W	
R3181	ERJ6GEYJ104V	RES,M 100K-J-1/10W	
R3182	ERJ6GEYJ473V	RES,M 47K-J-1/10W	
R3183	ERJ3GEYJ473V	RES,M 47K-J-1/32W	
R3184	ERJ6GEYJ103V	RES,M 10K-J-1/10W	
R3185	ERJ6GEYJ473V	RES,M 47K-J-1/10W	
R3186	ERJ3GEYJ103V	RES,M 10K-J-1/32W	
R3187	ERJ3GEYJ103V	RES,M 10K-J-1/32W	
R3188	ERJ6GEYJ103V	RES,M 10K-J-1/10W	
R3189	ERJ6GEYJ103V	RES,M 10K-J-1/10W	
R3190	ERJ6GEYJ473V	RES,M 47K-J-1/10W	
R3201	ERJ6ENF75R0V	RES,M 75.0-F-1/10W	
R3202	ERJ6ENF75R0V	RES,M 75.0-F-1/10W	
R3203	ERJ6ENF75R0V	RES,M 75.0-F-1/10W	
R3229	ERJ6GEYJ184V	RES,M 180K-J-1/10W	
R3230	ERJ6GEYJ184V	RES,M 180K-J-1/10W	
R3231	ERJ6GEYJ184V	RES,M 180K-J-1/10W	
R3232	ERJ6GEYJ184V	RES,M 180K-J-1/10W	
R3250	ERJ3GEYJ122V	RES,M 1.2K-J-1/32W	
R3251	ERJ3GEYJ122V	RES,M 1.2K-J-1/32W	
R3252	ERJ3GEYJ103V	RES,M 10K-J-1/32W	
R3253	ERJ3GEYJ103V	RES,M 10K-J-1/32W	
R3254	ERJ3GEYJ103V	RES,M 10K-J-1/32W	
R3255	ERJ3GEYJ103V	RES,M 10K-J-1/32W	
R3256	ERJ6GEYJ103V	RES,M 10K-J-1/10W	
R3257	ERJ3GEYJ273V	RES,M 27K-J-1/32W	
R3258	ERJ3GEYJ472V	RES,M 4.7K-J-1/32W	
R3259	ERJ3GEYJ332V	RES,M 3.3K-J-1/32W	
R3260	ERJ3GEYJ332V	RES,M 3.3K-J-1/32W	
R3261	ERJ3GEYJ273V	RES,M 27K-J-1/32W	
R3262	ERJ3GEYJ472V	RES,M 4.7K-J-1/32W	
R3264	ERJ6GEYJ103V	RES,M 10K-J-1/10W	
R3266	ERJ6GEYJ102V	RES,M 1K-J-1/10W	
R3267	ERJ6GEYJ102V	RES,M 1K-J-1/10W	
R3268	ERJ6GEYJ473V	RES,M 47K-J-1/10W	
R3269	ERJ6GEYJ473V	RES,M 47K-J-1/10W	
R3270	ERJ6GEYJ102V	RES,M 1K-J-1/10W	
R3271	ERJ6GEYJ102V	RES,M 1K-J-1/10W	
SWITCHES			
SW1001	EVQ11G05R	SWITCH	
SW1002	EVQ11G05R	SWITCH	
SW1003	EVQ11G05R	SWITCH	
SW1004	EVQ11G05R	SWITCH	
SW1005	EVQ11G05R	SWITCH	
SW1006	EVQ11G05R	SWITCH	
SW2911	K0L1BA000070	SWITCH	
TRANSFORMERS			
T801	G4D4A0000085	TRANSFORMER SWITCHING	△
T802	ETP28Z449BY	TRANSFORMER POWER	△
OTHERS			

Ref. No.	Part No.	Part Name & Description	Remarks
TU011	ENG6302GSF	MAIN TUNER	△
TU012	ENG36A08GSF	SUB TUNER	△
M001	LSGL0389-HB	POWER LED	
M002	LSGL0390-HB	IR PIECE	
1	LSDL0243-1	MIRROR FOR PT-50DL54J	
	LSDL0247	MIRROR FOR PT-60DL54J	
2	LSGQ0092-HB	MIRROR HOLDER HORIZONTAL	
3	LSGQ0093-HB	MIRROR HOLDER VERTICAL	
	LSGQ0103-HB	MIRROR HOLDER VERTICAL	
4	LSGV0086-HB	REAR LOWER COVER	
5	LSJH0066	SIDE JACK HOLDER	
6	LSSC0645-1	FRONT JACK PLATE	
M004	LSKC0008	LATCH	
M005	LSKF0523	CARD JACK HOLDER	
7	LSMA0700	ANGLE, BACK COVER PT-50DL54J	
	LSMA0715	ANGLE, BACK COVER PT-60DL54J	
8	LSYK1354-HB	SPEAKER BOX UNIT	
9	TBX2AA3101S	BUTTON 6 KEY	
10	TKP2AA1371S	FRONT COVER SIDE R	
11	TKP2AA1381S	FRONT COVER SIDE L	
12	TMM14414	STRIKE	
M006	TSX2AA0381	LINE CORD	△
13	TTP2AA1391S	FRONT COVER UNIT	
M007	TXFEN01RP4S	COLOR WHEEL	
14	TXFKP13JUSER	SD DOOR	
15	TKP2AA1411S	OPTICAL COVER	
16	TXFKP14JUSER	LAMP COVER UNIT	
17	TXFKP15JUSER	REAR JACK HOLDER	
18	TXFKP16JUSER	BASE BODY (BASE CABINET)	
19	TXFKU05JUSER	CABINET BACK PT-50DL54J	
	TXFKU06JUSER	CABINET BACK PT-60DL54J	
20	TXFKY17JUSER	CABINET FRONT PT-60DL54J	
	TXFKY18JUSER	CABINET FRONT PT-50DL54J	
21	LSGP0365	LENTICULAR SCREEN PT-50DL54J	
	LSGP0373	LENTICULAR SCREEN PT-60DL54J	
22	LSGP0374	FRESNEL SCREEN PT-60DL54J	
	TKG2AH50741	FRESNEL SCREEN PT-50DL54J	
23	LSXA0542	SCREEN ANGLE PT-60DL54J VERTICAL	
	LSXA0549	SCREEN ANGLE PT-50DL54J VERTICAL	
24	LSXA0548	SCREEN ANGLE PT-50DL54J HORIZONTAL	
	LSXA0541	SCREEN ANGLE PT-60DL54J HORIZONTAL	
25	LSMA0686	REAR SUPPORT ANGLE METAL	
26	EASG10P579A2	WOOFER	
27	EASG5PH519A2	TWEETER	
28	LSGV0073-HB	REAR SUPPORT PT-60DL54J	
M008	TY-LA2004J	LAMP	
M009	FBA06A12HS	FAN (SMALL)	
M010	FBL12G12LS	FAN MAIN (BIG)	
M011	K1PA14A00001	CONNECTOR, W/CABLE F	
DG4	K1KB14B00035	CONNECTOR	
DG6	K1KB18A00008	CONNECTOR	
DG7	K1KB30A00151	CONNECTOR	
CN3203	K1FB115A0019	CONNECTOR, FOR I/F USE	
CN4601	K1FB115B0079	CONNECTOR	
CN5001	K1FA119E0001	CONNECTOR	
CN6501	K1Y268000010	CONNECTOR	
CN6502	K1NA68E00006	CONNECTOR	
CN6503	K1NA12E00008	CONNECTOR	
JK4601	K2HC103B0063	CONNECTOR	
JK4602	K2HA204B0132	CONNECTOR	
JK3002	K2HA306A0028	JACKS	
JK3201	K2HC103A0017	JACKS	
JK3001	K1U824A00003	A/V TERMINAL	
JK3003	K2HA510A0003	A/V TERMINAL	
JK3004	K2HA510A0003	A/V TERMINAL	
JK3005	K2HA510A0003	A/V TERMINAL	
JK3202	K1U412A00010	A/V TERMINAL	
ACCESORIES			
M012	EUR7627Z20	REMOTE CONTROL	
M013	UR76EC2703A	REMOTE CONTROL BATTERY COVER	

Ref. No.	Part No.	Part Name & Description	Remarks
M014	TQB2AA0509-1	OWNER MANUAL	